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The Significance and Treatment of Varicose Veins

The Industrial Dental Clinic from the Standpoint of the Industrial Surgeon

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THE SIGNIFICANCE AND TREATMENT OF VARICOSE VEINS*

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(From the Surgical Clinic of the Peter Bent Brigham Hospital)

VARIX, or varicose veins of the legs, falls among the partly disabling diseases. In some individuals it appears to be tolerated without complaint; in others it leads to discomforts which interfere with the more strenuous occupations. It rarely is a cause of death. Among men the condition may be said to occur almost exclusively in those who are doing hard manual work, or whose occupations cause them to stand for long hours on their feet, and more particularly where both conditions are present. Among patients treated for the last six years at the Peter Bent Brigham Hospital, seventy-one men have been operated on for this disease. Of these, twelve were laborers, six were carpenters, five were machinists, four were teamsters, three were blacksmiths, and the remainder were scattered among the occupations (such as freight-handler, bricklayer, waiter, and salesman) necessitating hard work or long standing. Among women the cause of varix is almost always to be found in child-bearing. Occasionally it dates from puberty without obvious reason.

MECHANISM OF THE NORMAL VENOUS CIRCULATION

Varicose veins may be defined as surface veins which have lost their power to carry blood in the direction of the heart. The loss of this function will be better understood after a brief sketch of the mechanism by which the veins of the extremities normally carry back the used blood. All the veins of the extremities (and here we are dealing only with the legs) are furnished with many sets of bicuspid valves so arranged that the veins are divided into a series of segments in which the valves permit a flow of blood only in the direction of the heart. The arterial blood, having passed through the capillaries, is taken up by the veins, and every muscular movement tends to cause compression of the vessels, so that the blood is passed from one segment to another without the possibility of return. One has only to stand perfectly still for a long period to appreciate the discomfort caused by the failure of this muscular assistance. There is, in addition, a definite suction in the direction of the heart brought about by the movements of the heart and lungs, and there is, of course, a steady propulsion of the stream from the arterial circulation through the capillaries. The first of these influences being the most important, a breaking down of the valves is the principal cause of the establishment of varicose veins. (Figs. 1 and 2.)

THE BREAKING DOWN OF THE NORMAL MECHANISM AND ITS RESULTS

The loss of this mechanism is most readily brought about by increased intra-abdominal pressure, as for instance, when in lifting, the abdominal muscles are set, the breath is held, and the same strain is present which produces hernia. The valves break under this back pressure, further distention is brought about, the veins lengthen and become tortuous, the circulation in their walls becomes poor, and they develop into the familiar distended, saculated, fibrous vessels so often seen among working

* Received for publication Feb. 4, 1920.

people. And since the deep veins, which are well protected by their muscular surroundings, rarely if ever share in this process, we are dealing here only with the surface veins which carry probably only a comparatively small proportion of the blood returned from the legs. (Fig. 3.)

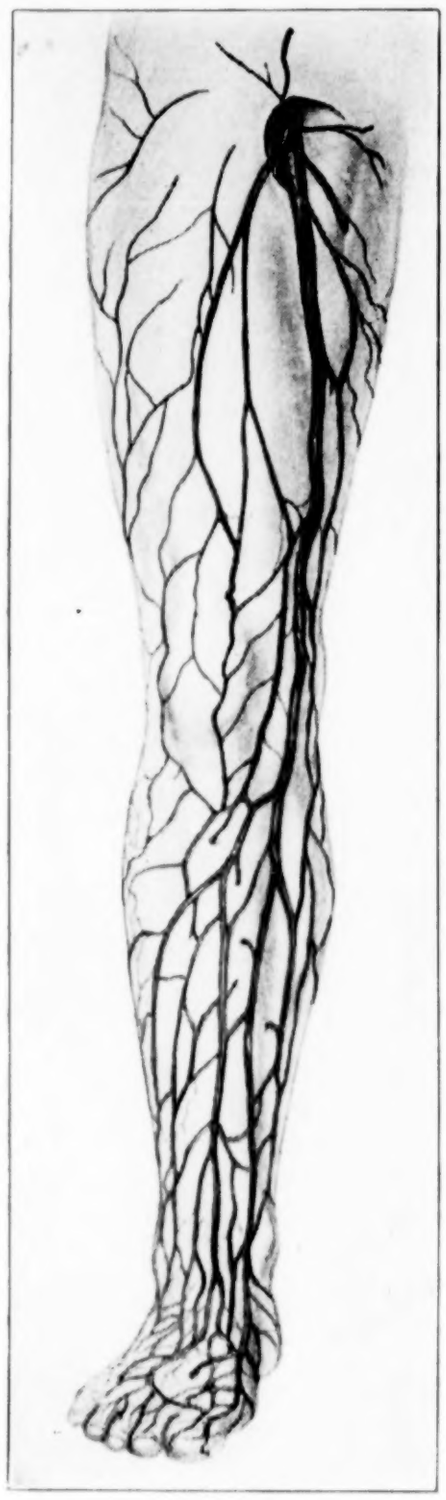

FIG. 1

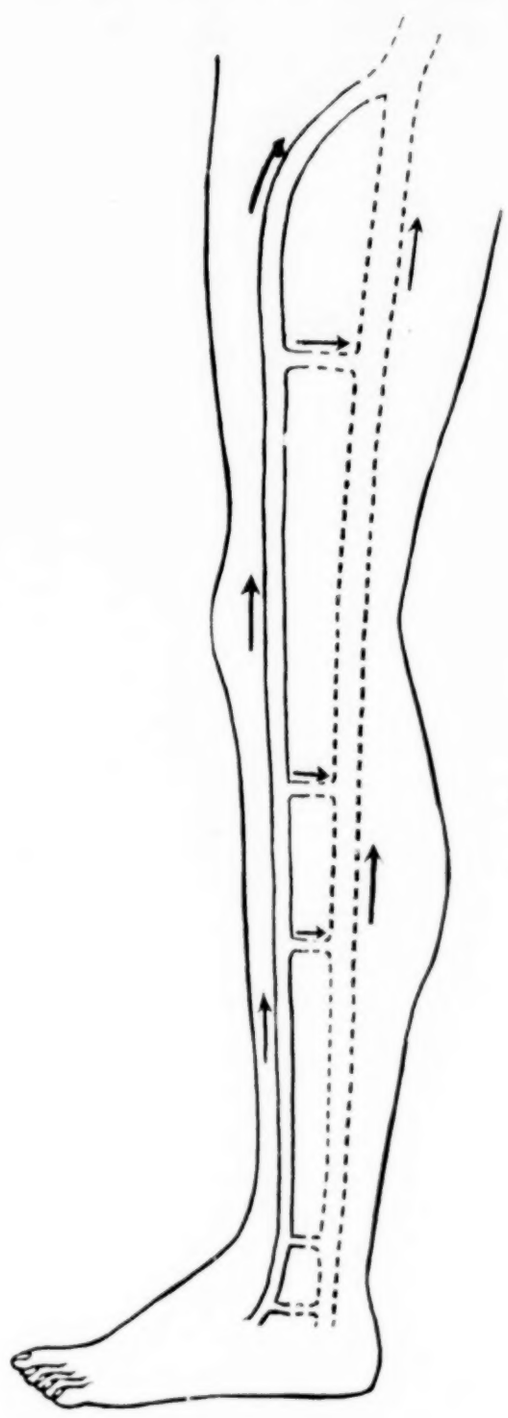

FIG. 2

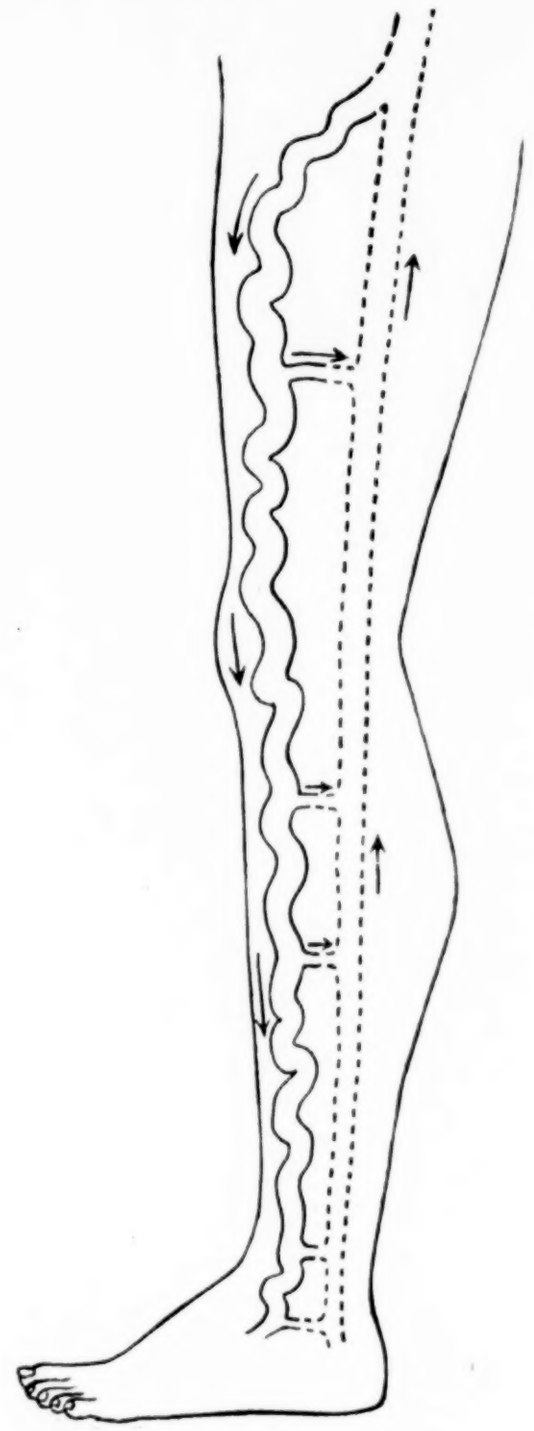

FIG. 3

FIG. 1. — The superficial veins, which may become varicose; the great or internal saphenous and its branches. The lesser saphenous which drains the back of the calf, emptying into the popliteal veins, is not shown. (*By courtesy of Surgery, Gynecology and Obstetrics, February, 1916, pp. 143–158.*)

FIG. 2. — Diagram showing normal direction of blood current in the superficial and deep systems. Perforating veins connect the two and carry blood toward the deep vessels only. (*By courtesy of Surgery, Gynecology and Obstetrics, February, 1916, pp. 143–158.*)

FIG. 3. — Diagram showing direction of blood current in varicose veins. Blood flows down the surface veins. The perforating veins drain the surface vessels. The deep veins do additional work. (*By courtesy of Surgery, Gynecology and Obstetrics, February, 1916, pp. 143–158.*)

The discomforts brought about by surface varicosity are due in part to the fact that blood has a tendency to pour down the surface veins and has to be carried away by the deep ones, so that a sort of vicious circle is established which continually throws increased work upon the latter. This, in all probability, brings about a certain amount of congestion of the muscles, and to this congestion must be attributed a great deal of the patient's feeling of heaviness and discomfort and the familiar slowing up of the action of the muscles themselves. Undoubtedly in some cases there is compensatory surface circulation outside of the great saphenous system so that the deep veins have very little additional work to do. In other instances, where the surface varicosity is very general and well developed, the overwork of the deep vessels is probably very important. Such differences as this may account for the variations in this type of discomfort experienced by different patients whose legs on superficial examination may appear much alike. Another

most annoying complaint is itching, harmless enough if it only led to the satisfaction of scratching. Unfortunately, scratching is too dangerous a pleasure to be indulged in with impunity, particularly in legs not too clean. In this connection, eczema, whether or not it may be laid to the door of the varicose veins, is the most cruel annoyance of all.

Complications

The disabling complications of varicose veins are ulcers and phlebitis. The former arise from trivial causes. Above all, lack of cleanliness is the important predisposing factor. Individuals suffering from varicose veins should be even more scrupulous in the care of their skin than ordinary individuals. It hardly requires argument to show that skin bacteria are more abundant and virulent in the absence of soap and water, and if scrupulous cleanliness could be made obligatory in the presence of varicose veins, the number of individuals disabled by complications would be enormously decreased. But often when every precaution is taken, bruises, or abrasions caused by scratching tend to heal badly, are easily infected, and give rise to obstinate ulcers. These vary tremendously in character, from the small, clean-looking sore " riding " on a surface vessel to the great foul ulcer with a tremendous leathery base which results from long neglect. I question very much whether the onset of ulcer can be foreseen and prevented. The only indication that ulcer is likely to occur is found in the areas of pigmentation, which suggest that the skin is constantly irritated and particularly poorly nourished. The presence of these pigmented areas should, I believe, be regarded as a warning that ulcers are likely to occur and in their presence operation may well be advised. (Figs. 4 and 5.)

The second complication, phlebitis, may occur at any time. While probably due primarily to infection, the clotting may appear to be clean and is often unaccompanied by any great local tenderness. At other times the clotted vein is surrounded by a very hard, tender zone. Any phlebitis calls for complete rest in bed — best in a hospital. It is always a possible source of embolism and should be regarded as a dangerous condition. The question of operating in the presence of phlebitis will be considered later.

Fig. 4. — Common type of varicose veins. On the right, the veins are shown at their natural distention. On the left, the back flow of blood down the veins is prevented by pressure on the great saphenous vein near the groin. The surface veins have previously been emptied by elevating the leg. Note the pigmented area in the lower calf suggestive of impending ulceration.

Palliative Treatment

There is no way of preventing the onset of varicose veins. Even provided that the number of those afflicted were sufficient to warrant the wearing by everyone of some support in the form of a bandage or stocking, it would be necessary to have this support applied to the thigh as well as to the lower leg, which is impracticable. However, once the condition is established, bandaging or the wearing of a supporting stocking is the only palliative treatment available. It may be said to subserve two purposes. In the first place, bandaging gives a great deal of symptomatic relief

and if properly carried out may do away with all the patient's discomforts. The word "bandaging" is used in a broad sense to apply to the use of the flannel or Benda bandage, to the elastic stocking, and to the fitted or canvass stocking. The first of these means, the flannel or Benda bandage, is under the control of the patient himself. He must learn to bandage his legs so as to attain comfort and must acquire this art from some physician. The second means, the elastic stocking, is rather expensive and is out of the reach of the ordinary patient. It is quite effective when the stocking is new, but is on the whole unsatisfactory, especially for working men. The third means, the fitted or canvass stocking, is quite practicable. At the Peter Bent Brigham Hospital we have made use, in the Out-Door Department, of the so-called Corliss stocking. The measurements are easy to take and, on the whole, these stockings fit well. They have to be laced up every morning and, if well fitted, are quite satisfactory; if they fit badly they are worse than useless. It has proved a help to have some kind of rib put into the inner and outer sides to keep the stockings from wrinkling. Any form of bandaging, if successful, not only promotes the patient's comfort but probably tends to prevent the onset of ulcers, since the bandage improves the surface circulation and the condition of the skin.

Bandages are again useful in the treatment of ulcer, but here their application must be carried out by a physician. It has been found that the most satisfactory arrangement is the so-called "jelly" bandage, which is nothing more than gauze permeated with a paste originally devised by Unna. Various unimportant modifications of this paste have been made. The formula for the paste is herewith given:

Zinc Oxide	10 gm.
Gelatin	40 gm.
Glycerin	120 c. c.
Water	150 c. c.

Dissolve the gelatin in hot water by heating. Mix the zinc oxide with the glycerin. Put all ingredients together and let stand until hard, occasionally stirring.

The method of application is as follows. The leg, which has been kept elevated for some time, is painted from the toes to a point below the knee with the heated paste. A single layer of narrow gauze bandage is then applied firmly without creases. Upon this a second layer of paste is painted, and in this way three or four layers of bandage impregnated with the paste are put on and allowed to dry. When dried, the jelly bandage is slightly flexible, smooth, and very durable. It may often be left on for several weeks. The ulcer can be treated without removing the bandage by cutting out a window and by making local applications as often as is advisable. The window is then covered with a sterile dressing, which is bandaged into place. In this way many ulcers can be healed, and it has been my custom to apply such bandages to patients leaving the hospital after operation for ulcer. In general, these bandages are very comfortable and although their application requires a certain painstaking skill, once a doctor or nurse is familiar with their use, they are a very simple and satisfactory therapeutic agent.

Diagnosis

The diagnosis of varicose veins is often very simple. No one can mistake the condition in the presence of dilated, tortuous, sclerosed surface vessels. On the other hand, it is important to distinguish between large veins which are not completely varicose and the fully developed condition, as well as to discover the presence of true varicose vessels which are not visible upon the skin. The test which distinguishes true varicose veins was originated by Trendelenburg. The theory of the test is that varicose veins have no valves and that blood flows down them quite as well as up. Therefore, if the leg is elevated above the level of the body and is then lowered, the blood is first emptied out of the superficial vessels and flows into them rapidly upon lowering the leg. This can conveniently be done by placing the patient in a chair, tipping the chair backwards with the patient's leg elevated, and then placing the patient quickly on his feet. In cases of true varicosity the surface veins fill with a rush, which is sometimes almost a palpable shock. The refinements of this test are quite obvious; for instance, if the leg is emptied of blood and a constriction only firm enough to block the surface veins is applied to the upper thigh, the veins below the constriction can no longer fill from above and remain empty until filled by the normal arterial circulation through the capillaries. This requires a considerable

time and in many cases a large, saculated vessel will remain empty, or very loosely filled, for perhaps a minute until the constriction is released, when it becomes tense at once. This refinement or, as it might be called, " constriction test " not only confirms the simple Trendelenburg test but demonstrates any leaking of blood, which should not ordinarily take place, from the deep veins to the surface. In other words, the simple Trendelenburg test demonstrates that there is a back flow of blood down the surface veins and that they are completely valveless. If now, with the constriction applied, the leg is returned to the ground and the surface veins fill rapidly below the constriction, there is not only a complete surface varicosity but there is also a valvelessness of the veins which perforate from the surface to the deep veins and which normally act only as a sort of overflow or safety vent for the former. The fact that these perforating vessels allow blood to pass from the deep veins towards the surface is of particular interest in connection with ulcer, for if in the presence of ulcer the varicosity of these perforating vessels is proved, it is generally advisable to excise the ulcer, since a leaking perforator may be directly beneath it. The same test will also discover the presence of a varicose condition in the lesser saphenous vein which empties into the popliteal space and drains the back and outer side of the calf.

If the Trendelenburg test is not obviously positive, there is some question whether apparently varicose vessels should be operated on, since the veins may still be doing some useful work and their removal might suddenly increase the work of the deep veins and bring about swelling of the leg until such time as the circulation becomes readjusted. In other words, operation should be delayed until the surface varicosity is complete and compensatory circulation, in so far as it can be, is established.

As to the condition in which varicose veins are present but are not visible, the diagnosis depends for the most part upon a history of a previous phlebitis. A phlebitis such as complicates typhoid leaves a very small, thick-walled, straight, and often

FIG. 5. — Case 1. (J. J. K. 2292) Varicose veins and ulcers of several years' standing in well-developed pigmented areas tributary to immense varicose veins. (*By courtesy of Surgery, Gynecology and Obstetrics, March, 1917, pp. 300–311.*)

FIG. 6. — (4060). Typical ulcers of postphlebitic varix. Veins almost unnoticeable. Compare with Figure 5. (*By courtesy of Surgery, Gynecology and Obstetrics, March, 1917, pp. 300–311.*)

invisible vein to which may be tributary a few thin-walled, very superficial tortuous vessels. By using these superficial vessels as an index, the Trendelenburg test can be demonstrated almost as well as in the presence of the familiar enormously dilated veins, and with a history of phlebitis gives the diagnosis. Such a condition is difficult to cure and operations can hardly be expected to restore the patient to his former usefulness, but they must be undertaken as a treatment for the ulcers which usually call attention to the underlying disease. In operating upon the ulcers the veins as well must be removed. This condition, which is frequently mistaken for syphilis, is, fortunately, rare. (Fig. 6.)

Operative Treatment

The operative treatment of varicose veins consists in the removal of the dilated surface vessels from the groin down. To be efficient it must permanently break the column of blood between the abdominal vessels, which have no valves, and the surface capillaries. If it accomplishes this, it permits the restoration of a considerable amount of surface venous circulation through small veins which have not been distended by the stagnation in the main venous channels. It does away with stagnant blood on the surface — blood which keeps pouring down the distended vessels and increases the work of the still normal deep veins. It thus removes veins which are worse than useless and affords real comfort, but as it does not restore the original surface circulation, it cannot be said to return the patient to an absolutely normal condition. In other words, a perfect surgical result may not make the leg as good as new.

It is not the intention of the writer to deal with the technicalities of operation, but rather with a few principles which surgeons should keep in mind if their operations are to be even as successful as indicated above. First, the great saphenous vein, which originates in the femoral vein and passes down the inner face of the thigh to be distributed to the lower leg, must be completely eradicated at its upper end so that new varicose connections with any remaining varicose branches below cannot become established — that is to say, it must be tied off at the saphenous opening, any branches entering its stump from above must be divided, and it must be thoroughly removed in the thigh. Probably the excision of its more obviously distended principal branches in the calf is less important. Their removal is more satisfactory to the patient's feelings, but since it is often impossible to do away with all of them and since the back pressure from above is really the cause of the patient's discomfort, their removal is far less important than the thorough eradication of the saphenous vein above.

Second, by whatever method the veins are removed, the healing of the operative wounds must be perfect. There must be no sloughing of skin nor any inflammatory reaction. This requires the most gentle handling of tissues in operating, and it is always better to remove the veins from beneath full thickness flaps of skin and fat than to attempt to follow a tortuous vessel from the surface. I am convinced that unless operative wounds heal in a perfectly reactionless way, the percentage of operative failures is bound to be greatly increased.

Third, ulcers must be dealt with in such a way that they cannot recur. This is perhaps the requirement the most difficult of fulfillment. When the ulcer "rides" upon a vein (as is usually the case), the removal of the vein is almost necessarily curative without any direct attack upon the ulcer itself. If, however, the ulcer is of such long standing and so surrounded by scar tissue that even after the removal of the veins the circulation beneath it is bound to be poor, it is better to excise the ulcer without regard to its size, even down to bone or muscle, and to skin-graft the defect.

Finally, when phlebitis is present, the difficulties not only of operating but of the decision to operate are intensified. In early acute phlebitis it is probably a safe rule to delay operation when the thrombosis has extended into the upper thigh. Until organization of the clot reduces the danger of detaching an embolus by operative handling, the patient should be kept quiet in bed. Later, since thrombosis and organization appear always to be followed by re-establishment of the circulation, the standard excision of the veins should be carried out. And since the vitality of the tissues is even lower than before, the operative technique must be particularly perfect.

If thrombosis is confined to the calf —gentle palpation easily determines this— operation may be performed at once, for

high division of the great saphenous vein will then block any possible embolism. Care must be exercised in handling the thrombosed region and in estimating the healing qualities of the tissues in the neighborhood of the phlebitis. It is often advantageous to remove a narrow block of skin with the thrombosed vessels.

Operations carried out on these principles have, on the whole, proved very satisfactory and I believe that the bad name carried by the usual run of operations for varicose veins should not be deserved. There is one small class of varices, however, in which operative failure is not uncommon. This includes the varicose veins which develop following the phlebitis of acute diseases, such as typhoid. This phlebitis really amounts to a general infection of all the superficial tissues of the calf. It leaves a normal looking leg, the veins themselves thick-walled, small and invisible, but ulcers appear early, are very obstinate and painful, and their cure is exceedingly difficult. On the other hand, the legs which present immense dilated surface varicosity, diffuse pigmentation and ulcers tributary to "lakes" of blood are usually susceptible of a satisfying operative cure. For example: the subject of Figure 6, a post-phlebitic case, was never completely cured by operation: but the subject of Figure 5, an advanced varix of the common type, had worked ever since operation as a longshoreman and was well two years after operation. (Fig. 7.)

Results

The following list of male patients, taken in series from the earliest cases treated in the hospital up to the last cases in whom the result is known, will give an idea not only of the difficulty of following up patients, but also of the successes and failures. In general, the patient's own statement as to success or failure has been accepted without regard to the opinion of those who have examined him. In this list there will be found to be forty-eight cases. Seventeen have not been traced; eighteen may be considered to be completely successful; eight have been partially successful; and five have been failures.

No. 115. — Machinist: Able to resume work; well two years after operation. *Success.*

No. 125. — Freight-handler: Cannot be traced.

No. 215. — Longshoreman: Able to resume work; well two and a half years after operation. *Success.*

No. 246. — Machinist: Cannot be traced.

No. 419. — Freight-handler: Returned to work after first operation; five months later entered hospital again because ulcers had not all healed; result of second operation not known. *Partially successful.*

No. 533. — Cook: Has been subjected to a number of operations since the original; great general improvement; not cured. *Partially successful.*

Fig. 7. — (J. J. K. 2292). Same patient shown in Figure 5. One and one-half years after operation. The oblique scars in the groins barely show. Note that some veins in the lower leg still show. No discomfort or return of ulcers. (*By courtesy of Surgery, Gynecology and Obstetrics, March, 1917, pp. 300–311.*)

No. 685. — Laborer: Recurrence of ulcer without discomfort; refuses further treatment. *Partially successful.*

No. 785. — Barber: Well since operation; two years later reported cured. *Success.*

No. 857. — Laborer: Well for a year after operation; mild recurrence of symptoms. *Partially successful.*

No. 1256. — Laborer: Report two years later; said to be drinking; probably not well; not examined. *Failure.*

No. 1382. — Laborer: Cannot be traced.

No. 1433. — Laborer: Subsequently died of tuberculosis. *Result not known.*

No. 1757. — Machinist: Well since operation; three years later reported cured. *Success.*

No. 1950. — Laborer: Cannot be traced.

No. 2007. — Stationary fireman: First operation, complete cure and returned to work for two years;

second operation (other leg), death from embolism. *Failure.*

No. 2053. — Shoemaker (foreman): Well since operation; two years later reported cured. *Success.*

No. 2771. — Bricklayer: Reports one year later; does not consider himself improved; not seen. *Failure.*

No. 2911. — Railroad man: Cannot be traced.

No. 2995. — Cook: Well since operation; two years later reported cured. *Success.*

No. 3245. — Teamster: Cannot be traced.

No. 3514. — Fruit-dealer: Two years later reported to be well. *Success.*

No. 3542. — Tailor's pressman: Five months after operation does not consider himself improved. *Failure.*

No. 3757. — Laborer: One year after operation reports himself as well. *Success.*

No. 3819. — Hospital orderly: Cannot be traced.

No. 3926. — Textile-worker: Cannot be traced.

No. 3981. — Teamster: Unable to do heavy work; much improved. *Partially successful.*

No. 4106. — Accountant: Well after discharge; four months later reported cured; no subsequent note. *Success.*

No. 4329. — Stationary fireman: Re-operated on. *Failure.*

No. 4060. — Bricklayer: Cannot be traced; known to be hard drinker.

No. 4385. — Shoe stitcher: Well since operation; two years later reported cured; " does a great deal of heavy lifting." *Success.*

No. 3541. — Blacksmith: Reported working at his previous occupation one and a half years after discharge; no note of local condition. *Success.*

No. 4779. — Driver's helper: Well after operation; two years later reported cured. *Success.*

No. 5121. — Carpenter: Cannot be traced.

No. 5262. — Carpenter: Cannot be traced.

No. 5273. — Carpenter: Well since operation; two years later reported cured. *Success.*

No. 5962. — Teamster: Cannot be traced.

No. 6392. — Pipe-fitter: Cannot be traced.

No. 6104. — Piano-worker: Has been seen subsequent to leaving hospital and makes no mention of his legs. *Success.*

No. 6518. — Piano-worker: Has worked hard since operation, sometimes eighteen hours at a stretch; two years later reported well. *Success.*

No. 4942. — Longshoreman: Cannot be traced.

No. 6652. — Chauffeur: Cannot be traced.

No. 7193. — Iron-worker: Well since operation; two years later reported cured. *Success.*

No. 7107. — Piano-worker: Cannot be traced.

No. 3131. — Laborer: Twice operated; well after second operation; two years later reported cured. *Success.*

No. 7826. — Soda-fountain clerk: Two years after operation has some dilated veins over front of leg; wears bandage. *Partially successful.*

No. 7248. — Restaurant proprietor: Well since operation; two years later reported cured. *Success.*

No. 8442. — Shipper: Cannot be traced.

No. 7940. — Salesman: Two years later reports leg healed up but feels he was never cured; wears an elastic stocking. *Partially successful.*

Conclusions

1. Varicose veins in males occur among those whose occupations entail hard manual labor and long hours of standing.

2. The palliative treatment of varicose veins is only moderately satisfactory and depends for its success principally upon the co-operation and conscientiousness of the individual.

3. Disabling complications, ulcer and phlebitis, may, to a limited extent, be foreseen and prevented by cleanliness and palliative treatment. If they become recurrent or constant factors, operation is to be advised.

4. Operation for varicose veins, if properly performed, is usually curative. The very nature of the disease may, however, cause a theoretically perfect operation to fail to make the patient " as good as new." And the more advanced and complicated the disease, the less complete is the post-operative return to normal.

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THE INDUSTRIAL DENTAL CLINIC FROM THE STANDPOINT OF THE INDUSTRIAL SURGEON*

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A PRELIMINARY presentation of this subject was first given in a paper read before the Health Section of the National Safety Council at the fall meeting held in St. Louis in 1918. The object of this preliminary report was to foster interest in industrial dental work in conjunction with industrial hygiene. Up to that time, it seemed that men engaged in this branch of industrial work had neglected the systematic study of cases in their dispensaries which had come up either for examination or for treatment, and had thereby missed many opportunities for doing the most good for their workers. In fact, at the majority of clinics it still seems to be the practice merely to fill out record cards, to list the total number of persons examined, treated or rejected, and to make no attempt to follow up the cases or to diminish the number requiring treatment by a careful study of the records and analyses of the underlying causes responsible for existing disabilities. Only occasionally is a note made of the transfer of a case to a doctor or to a hospital for treatment, and even more rarely do we find a report of the result of such treatment on the original history card.

The purpose of presenting this important subject at this time is the thought that it may stimulate a more careful survey of the field and may ultimately bring about a more exhaustive and scientific study of the individual records, and closer co-operation between the industrial surgeon, the industrial dentist and the industrial nurse.

We are familiar with the extraordinary frequency with which oral sepsis is overlooked alike by all concerned — physician, patient, surgeon and even the dentist. It is not the purpose of this paper to point out how common a cause of disease mouth infection is, how great its effects, or how often it is lightly regarded. The special interest of dental disease arises from the fact that dental cario-necrosis is the most common and most prevalent infection in the body and that this infection is mixed in character, including not only harmless organisms but also all the pathogenic organisms known to bacteriologists.

The modern industrial clinic must include the services of a dental surgeon. Our experience has but confirmed our belief that among young people engaged in factory work the conditions in the mouth are of greater importance and of more serious import, in so far as impaired usefulness is concerned, than functional disorders of the circulatory system or of the kidneys. Also it is important that contact between employee, physician and dentist should be established with the preliminary physical examination of the applicant for employment.

An examination of the oral cavity should be a part of the general physical examination of each new employee. In fact, conditions in the mouth may serve to show that the applicant as soon as employed may become a liability rather than an asset. In our own dispensaries the examining physician and dentist are on duty at the same time and they occupy, so far as possible, adjoining rooms and the record cards are filed in the same envelope. Frequent consultations are the rule rather than the exception. A not unusual incident, which occurred in one of our dispensaries a short time ago, will illustrate the value of this combined examination. The dentist, in his preliminary examination, called the examining physician's attention to the condition of the applicant's mouth. The findings observed in the oral cavity led to a diagnosis of syphilis in the secondary stage, and a most dangerous menace to the health of the working body was excluded. The removal at this preliminary examination of a decayed tooth, which is almost sure to ache at any moment, is not to be overlooked. Cases of toothache have caused new employees either to quit or to lose time within the first few days of their employment.

Of the well-conducted dental clinics in the many industrial organizations in the

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United States, most have been established because of the demand of the physician in charge of the medical department that he be given this additional help in his work. From the standpoint of the industrial surgeon, therefore, the dental clinic is an absolute necessity. Without it his work must be regarded as incomplete and of necessity unsatisfactory. After an experience of over two years of this close relationship between the dental and medical clinics, we realize that intelligent co-operation between the dentist and doctor leads not only to the improved physical well-being of the individual employee, but also to the increased self-respect which a clean, attractive mouth gives to an individual. This in turn has a distinct bearing on increased morale throughout the working force.

The typical cases benefited by strict attention to oral hygiene are of such frequent occurrence and the causes so commonly recognized that it would seem superfluous at this time to detail any considerable number of such cases. However, from the viewpoint of economy of time a few rather unusual selections may perhaps be of interest. The head of one of our departments, under systematic treatment for diabetes, can be kept sugar-free only so long as his mouth is in perfect condition. The pyorrhea and general septic conditions of the mouth which so often accompany diabetes are particularly troublesome. In this instance, the neglect of careful prophylactic measures in the mouth for but a few days results invariably in the reappearance of sugar. A sufficient number of cases of fainting from no apparent cause, which have been cleared up as a result of careful oral prophylaxis, have been observed during the past two years to convince us that oral sepsis is at least one of the leading factors in the occurrence of this annoying and often disorganizing accident. Cases of multiple arthritis and of digestive disorders that have been relieved by elimination of septic foci in the mouth have been so numerous that their treatment by this means has become an established practice.

From our experience during the past two years, therefore, we have arrived at the conclusion that the relation of the industrial dentist to the medical department should be that of the industrial dental hygienist, that it is his duty to eliminate sources of infection in the mouth as regularly and as thoroughly as a sanitary engineer banishes such hazards from our building. His main functions are to clean and to instruct rather than to devote his time to the more routine dental operations, and to assist the medical department in its big campaign of preventative work.

To do the best work the dental dispensary must be thoroughly equipped. Much time and thought have been lavished during the past few years upon a careful selection of the equipment for medical and surgical aid in certain industrial clinics. On the other hand, other clinics have often been supplied with second-hand equipment, which not only seriously hampered the resident dentist's efforts to do thorough work but also gave the patient a false impression of modern dental practice. Remembering, then, that this work is largely preventative and educational, it necessarily follows that the equipment should be of the best not only in workmanship but in appearance. In addition to the usual equipment of a modern dental office, we have installed an X-ray apparatus of the latest design. This has enabled us to increase the value of our work by at least 100 per cent. Our collection of dental films has added greatly to the store of knowledge accumulated in both medical and dental clinics. The value of this work is apparent from the fact that in the past six months several factory managers have practically demanded increased service in the dental clinics, so that at present the aggregate number of hours is about equal in both medical and dental dispensaries.

Another point of contact between the medical and dental work in our industrial clinics which is rather unusual is the fact that many of our doctors and dentists are engaged in joint research work. From the result of their combined endeavors we expect much. We believe that this research will benefit first of all the workers themselves. By the knowledge thus gained workers will be kept more healthy and more contented, and their productivity and earning power will thereby increase. The company will be the gainer because of lessened absences and increased morale.

Before concluding, however, we would like to emphasize the fact that the teeth are not always the cause of arthritis; that the teeth are not the only cause of dis-

ordered stomach, nor the sole cause of anemia. Too often the mistake has been made by the over-zealous to attach to mouth infection, particularly of the teeth and gums, an exaggerated and, at times. an absurd importance as a causative factor in constitutional diseases. But this fact only emphasizes the great importance and the inestimable value of a complete clinic in which the patient—in this case our employee—may have the benefit of various opinions as to the nature of his illness and the steps which should be taken to restore him to his former health and usefulness.

CHARLES TURNER THACKRAH *

A Pioneer in Industrial Hygiene

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IN the controversies which have centred on the modern factory system, the student can readily distinguish, I think, three periods in which a fresh, distinct appeal was made to the mind of the thinking public on the score of health. The first period — the one in which Thackrah lived — was much the longest, extending over about half a century, from before 1800 to 1850, and the controversies which occurred during it were excited by concern at the excessively long hours worked by young children and the extreme instances of fatigue among them. Inquiry into these long hours disclosed well-nigh unbelievable facts. One of the witnesses says:

"The hours of labour at that (worsted spinning) mill were from 5 in the morning till 8 at night, with an interval for rest and refreshment of thirty minutes at noon; there was no time for rest and refreshment in the afternoon. We had to eat our meals as we could, standing or otherwise. I had fourteen and a half hours' actual labor when 7 years of age; the wages I then received were two shillings and sixpence per week. I attended to what are called the throstle machines; this I did for two years and a half, and then I went to the steam looms for half a year. In that mill there were about fifty children, of about the same age as I was. These children were often sick and poorly. There were always perhaps half a dozen regularly that were ill because of excessive labour. We began to grow drowsy and sleepy about 3 o'clock, and grew worse and worse, and it came to be very bad towards 6 and 7. I had still to labour on. There were three overlookers; there was a head overlooker, and then there was one man kept to grease the machines, and then there was one kept on purpose to strap. Strapping was the means by which the children were kept at work. It was the main business of one of the overlookers to strap the children up to this excessive labour — the same as strapping a restive horse that has fallen down and will not get up. This was the practice day by day. The children were not capable of performing the amount of labour that was exacted from them without perpetual cruelty. I had at that time, similarly occupied, a brother and sister. I cannot say how old my sister was when she began work in the mill, but my brother John was 7. They were often sick; my brother John died three years ago — he was then 16 years and 8 months old. My mother and the medical attendants were of the opinion that my brother died from working such long hours, and that it had been brought about by the factory."

Another says:

"I am now 16 years of age. I have been employed in piecing at a worsted mill. The hours of labour were from six in the morning to seven, half past seven and eight at night, half an hour was allowed at noon for dinner — not any time was allowed for breakfast or 'drinking.' I entered the mill at 9 years of age; my father was obliged to send me to the mill in order to keep me. If we are higher than the frames we have to bend our bodies and our legs — so. (Here the witness showed the position in which he worked.) I was a healthy and strong boy before I went to the mill. I had worked about a year for those long hours before I found my limbs begin to fail. The failing came on with great pain in my legs and knees; I felt very much fatigued towards the end of those days — then the overlooker beat me up to my work. I have been beaten till I was black and blue in my face, and have had my ears torn. I was beaten because I had mixed a few empty bobbins, having not any place to put them into separate. I was generally beaten most at the end of the day, when I grew tired and fatigued. In the morning I felt stiff, very stark, indeed: I was beaten in the morning as well, but not so much as towards the latter end of the day. I continued to attend the mill after my limbs began to fail. After I became deformed, I did not get on so well with my work as I could before. I got less in height. I cannot exactly say how tall I am now. I have fallen several inches in height. I had to stand thirteen or fourteen hours a day frequently, and was constantly engaged as I have described. (The witness, at the request of the Committee, exhibited his limbs, and they appeared to be exceedingly crooked.) I was perfectly straight before I entered upon this labour. There were other boys deformed in the same way."

In the controversies over this period the names of Percival, Owen, Oastler, Sadler, Shaftesbury, and Thackrah are household words. As a result of outside pressure from men such as these, before 1850 the hours were limited to ten a day, and of children under 11 to the same hours on alternate days, or half time, with compulsory school attendance.

Charles Turner Thackrah's title to fame rests on his little volume of 124 pages, published in 1831, "The Effects of the Principal Arts, Trades and Professions, and of Civic States and Habits of Living, on

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Health and Longevity, with a Particular Reference to the Trades and Manufactures of Leeds, and Suggestions for the Removal of Many of the Agents which Produce Disease and Shorten the Duration of Life." The conditions which he described as to employment of children and hours of labor focussed attention on the subject and led up to subsequent legislation.

Thackrah, we learn from the short biographical memoir of him by Dr. H. Y. Whytehead prefixed to his "Inquiry into the Nature and Properties of the Blood," was born in 1795. When 16 years old he was apprenticed to a surgeon in Leeds and filled up his spare time in voracious reading of works on medicine, history, and general knowledge. In 1814 he became a pupil at the Leeds Infirmary. The following two years were spent at Guy's Hospital where he came under the influence of Sir Astley Cooper. In his diary, written at this time, he states that his usual hours of study were from 7 A.M. until 11.30 P.M. In 1817 he started in practice in Leeds on his own account.

Thackrah's health, even at this time, was impaired by debility, the result of a chronic intestinal affection which never entirely left him. This ill health early in life made his outlook on life unusually sombre, as may be gathered from a letter written about this time: "On a temperament like mine, naturally melancholic, with feelings naturally keen — at times, alas! painfully acute — the common trials and disappointments of life produce an effect which is unknown to a man of less sensibility."

In 1818 he became town's surgeon and in the following year, at the request of the Committee of the Leeds Workhouse, he drew up a report on the miserable state of the inferior class of lodging houses. Although it is nowhere mentioned in the biographical sketch referred to, I derive pleasure from the thought, suggested by a paragraph in the autobiography of Robert Owen, that Thackrah owed his bent towards preventive medicine to his acquaintance with this greatest of factory reformers. Owen describes how, in 1814, he visited Leeds at the invitation of this same Workhouse Committee, to explain the methods adopted by him at the New Lanark Mills. If Thackrah, then an impressionable youth of 19, met Owen, we can readily imagine what an effect Owen's personality would have had upon him. About the year 1824, Thackrah commenced his inquiries into the effects of various manufacturing processes upon the health of artisans. In 1831 he joined other members of his profession in establishing the Leeds School of Medicine.

"The first edition of 'The Effects of Arts, Trades and Professions on Health,'" says his biographer, "experienced a reception equally favorable from the profession and the public in general. The impression was speedily disposed of and a new and improved edition was issued in the following year." About this time Thackrah visited Newcastle and Gateshead during the cholera epidemic and, subsequently, until his death from tubercular disease in 1833 — when only 37 years of age — he gave every spare moment to preparing a new edition of his work on the blood. He seems to have realized how short his life would be, and determined to make it crowded.

Whytehead concludes his sketch by illustrating Thackrah's views and feelings from one of his unpublished lectures:

> "Is the fervour of youth to be wholly expended in the accumulation of wealth? . . . Are there no noble objects for your ambition? Why should you not be Harveys, Hallers, and Hunters? . . . Why not emulate the examples of Hewson, Dessault, and Bichat? Soaring above their professional associates, deriding the attacks of envy, unbroken by anxiety and toil, they held on their course of glory. They all died at an early age; but their youthful studies brought an honour which the maturer efforts of their envious competitors could never attain. Their names are engraven in the temple of fame."

And elsewhere he says, "I shall have one satisfaction, that my remembrance will not perish."

In his "English Sanitary Institutions," Sir John Simon refers to Thackrah's book as one of the new momenta in modern preventive medicine comparable with the work of Jenner.

> "Not less meritorious than the assiduity and the care for truth with which he collected his facts, were the unprejudiced good sense and moderation with which he weighed them, and the service thus rendered by Thackrah deserves grateful recognition. By his eminently trustworthy book, he . . . made it a matter of common knowledge, and of State responsibility, that, with certain of our chief industries, special influences, often of an evidently removable kind, are apt to be associated, which, if permitted to remain, give painful disease and premature disablement or death to the employed person."

As is to be expected, in view of the different times in which they lived, there is an enormous difference in the attitude of mind with which Thackrah and Bernardius Ramazzini (Professor of Medicine at Modena and afterwards at Padua, and a pioneer in industrial hygiene who antedated Thackrah) approached their subjects, although the actual industries and occupations described are very much the same. Ramazzini's book on the "Diseases of Tradesmen" was published towards the end of the seventeenth century — just about 130 years before Thackrah's. When Ramazzini is dealing with the classical symptoms of mercurial tremor in mercurial gilders and workers in cinnabar mines, of lead palsy and lead cachexia among potters or painters, and fibroid phthisis among stone masons, his brief graphic description to be read in Dr. James' translation made in 1700 cannot be bettered. But amusement mainly results now from its perusal because of its extraordinary wealth in gossip, old-wives' tales and references, relevant and irrelevant (chiefly the latter), culled from classical and mediaeval writers on medicine.

Sydenham was almost an exact contemporary of Ramazzini, and it was no doubt the reading of such works as that on "The Diseases of Tradesmen" which led him to say in reference to his own book on "A Method of Curing Fevers" that it was "neither vast in bulk, nor stuffed out with the spoils of former authors." Ramazzini trusted his own knowledge very little and was content so long as he had any tag on which to hang a quotation. Nor was he, apparently, able to distinguish between an offensive and a dangerous trade. To swell out his volume his list of tradesmen besides those already mentioned, such as dyers, tanners, tobacconists, brewers, bakers, millers, washerwomen, flax, hemp and silk hecklers, printers, etc., is extended so as to include apothecaries, doctors, sewer men, undertakers, midwives, nurses, fishermen, sitting Jews, couriers, grooms, porters, and the effects of standing and sedentary work. His methods of treatment are those of the Middle Ages.

Thackrah, on the other hand, was a thorough anatomist, and well versed in methods of clinical diagnosis. He classifies professions admirably into: (1) Operatives, subdivided into occupations carried on (a) in the open air, (b) in a confined atmosphere, and occupations exposed (c) to dusts, odors, or gaseous inhalations, (d) to moisture, and (e) to high temperatures; (2) Dealers; (3) Merchants; (4) Professional Classes. He concludes with remarks on accidents from machinery, deformity, intemperance, and remedies for the physical evils of our civil state. We may think now that he approaches his subject with undue sententiousness, but that is characteristic of the writing of the time.

It is wonderful, too, what use Thackrah makes of the material at his disposal in Leeds — material abundant, certainly, as regards work carried on in cloth mills, but scanty as regards important industries in which lead, arsenic, or mercury was used. Wool-sorter's disease was, of course, unrecognized, although reference is made to the annoyance caused by the lime used in separating the fleece from the skin. Had he in mind, I wonder, African boxwood, the subject of recent interesting inquiry, when he wrote that cabinet makers suffer when they see African wood, which "produces sneezing, headache, sickness and sometimes vomiting?" Of dusty occupations he specially singles out workers in flax, and his detailed results of auscultation and percussion of the chests of persons still employed at their work, showing chronic bronchitis, emphysema and, in some cases, added tuberculous infection, can still be read with profit. "The coughs of the persons waiting to be examined were," he says, "so troublesome as continually to interrupt and confuse the exploration of the stethoscope." He is not led away as Ramazzini was into believing that offensive trades must necessarily be injurious. On the contrary, as the result of his inquiries he classes as directly or indirectly beneficial the animal exhalations to which glue makers, tanners, tallow-chandlers, leather dressers, grooms, etc., are exposed.

In the light of recent work by Haldane and the Humidity Committee, Thackrah's study of the effects of high temperatures and exposure to steam is eminently reasonable, and he is unable to subscribe to the conclusions that exposure to these influences is a potent cause of illnesses, such as rheumatism, pulmonary disease, or even catarrh. Discussing his findings, he says:

"Anyone who is disposed to repeat the investigation must not be content with the loose statements of thoughtless and prejudiced workmen. He must ask the most intelligent . . . less for their opinions,

than for their *observations* — their own personal knowledge."

But equally incisive is his criticism of the methods pursued in the physical education of the young, especially of girls. Thackrah could not fail to be deeply impressed with the evils of child labor in unwholesome surroundings. After remarking that substitution of children for adults in flax mills produces no apparent and immediate evil, because when 13 or 14 they usually change their employment, the doubt is expressed of whether even then they escape ultimate injury to the lungs. He describes their condition thus:

"Children from 7 to 15 years of age go to work at half-past five in the morning, and leave at seven in the evening — or at half-past six, and leave at eight — and thus spend twelve hours a day, for five or six years, in an atmosphere of flax dust."

And later on applying his argument generally he says:

"The employment of young children in any labour is wrong. The term of physical growth ought not to be a term of physical exertion. Light and varied motions should be the only effort, — motions excited by the will, not by the task-master, — the run and the leap of a buoyant and unshackled spirit. How different the scene in a manufacturing district! No man of humanity can reflect without distress on the state of thousands of children, many from 6 to 7 years of age, roused from their beds at an early hour, hurried to the mills, and kept there, with the interval of only forty minutes, till a late hour at night; kept, moreover, in an atmosphere impure, not only as the air of a town, not only as defective in ventilation, but as loaded also with noxious dust. Health! cleanliness! mental improvement! How are they regarded ? Recreation is out of the question. There is scarcely time for meals. The very period of sleep, so necessary for the young, is too often abridged. Nay, children are sometimes worked even in the night."

The sanity of his judgment prevents his being led into denunciation of employers for the conditions. His condemnation is directed against the way in which a temporary expedient to encroach on working hours was allowed to develop into a permanent system. Thus, he says:

"The duration of labour is the opprobium, rather of our manufacturing system, than of individuals. The masters with whom I have conversed are men of humanity, and willing, I believe, to adopt any practicable proposal to amend the health, and to improve the state of their workpeople. But they are scarcely conscious of the extent of mischief. We underrate evils to which we are accustomed. The diminution of the intervals of work has been a gradual encroachment. Formerly an hour was allowed for dinner; but one great manufacturer, pressed by his engagements, wished his workpeople to return five minutes sooner. This abridgment was promptly adopted at other mills. Five minutes led to ten. It was found also that breakfast and 'drinking' (afternoon meal) might be taken while the people were at work. Time was thus saved; more work was done; and the manufactured article consequently could be offered at a less price. If one house offered it at a lower rate, all other houses, to compete in the market, were obliged to use similar means. . . . A legislative enactment is the only remedy for this, as well as the other great opprobium of our manufactures. Were a Bill drawn up to limit the duration of labour, and prevent the improper employment of children, I feel assured that it would be well supported by petitions, not only from the public, but also from the masters themselves."

The enormous strides since made in the removal of dust by fan ventilation were foreshadowed in a suggestion of Thackrah's:

"Let channels, about a foot in breadth, be made in the floors, each with one end opening into the room and the other outside of the building. Over the former let a light broad wheel, attached to the machinery, be made to revolve rapidly. A current of air will thus be produced, and this entering the channel will draw down the greater part of the dust, and carry it out of the building. If the plan succeed in the flax mill, it would avail also for removing the dust of corn and malt-mills, indeed, of all the manufactures, which affect the lungs by mechanical irritation."

I believe Thackrah's early death retarded the progress of industrial medicine and surgery and the amelioration of conditions of employment for half a century. Had he lived, his clinical knowledge and experience would have given prominence in legislation to the need for medical supervision in the factory and workshop by practitioners having the necessary knowledge of the home conditions of the workers and the maladies attributable to industrial life in its widest sense.

A LECTURE ON SEX AND VENEREAL DISEASE HYGIENE*

EDWARD B. VEDDER, M.D.

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[At our request, Colonel Vedder has prepared the following article as a type lecture to be delivered to intelligent, adult employees on the subject of sex and venereal disease hygiene. — *Ed.*]

The Purpose of Sex

THE birth of young, whether animal or human, is such a common occurrence that we seldom realize that the production of a new individual is the most wonderful phenomenon in our experience. For it is an act of creation, and it is in the exercise of creative faculties that man most resembles God.

The question naturally arises, why is the union of male and female so essential? We know that bacteria and a few of the lowest animals reproduce asexually by simply dividing. But here there is no individuality; one bacterium is as like another as two bird-shot. On the other hand, among the higher animals that perpetuate themselves through sexual reproduction, every individual is different. There are roughly two billions of human individuals on this earth, no two of whom are precisely alike either physically or mentally; and it is this fact that makes life together and the progress of the race possible. It would be a most peculiar world if every man insisted on being a doctor. But as we are all different, one man chooses to be a doctor, another a lawyer, another a machinist, and so the world's work is done. Moreover, all special talent or ability is due to the happy blending of mental qualities as the result of some particularly fortunate mating. Thanks to the process of sexual reproduction, we shall never be without leaders in thought and action who point out the way to better things. This is what sex accomplishes for the race, and it is accordingly a matter to be treated seriously.

The Mechanism of Sex

You should be interested in the mechanism by which these results are accomplished. Every individual develops from a single cell which is formed from the union of a spermatozoön or male sexual cell and an ovum or egg, the female sexual cell. The spermatozoa are developed in the testicles or sex glands of the male, and the ova in the ovaries or sex glands of the female. Figures 1 and 2 will show you the structure of the male and female genital organs.

Active sexual life in this climate begins usually at the age of 14 or 15, and is called puberty. In the male this is indicated by a change in voice and the growth of hair on the face and other parts of the body. In the female there are corresponding changes, including the development of the breasts, but sexual maturity in the female is marked much more sharply by the appearance of the menstrual flow from the uterus. Menstruation is probably a process which prepares the uterus for the reception of a fertilized ovum. At any rate, at about the time that menstruation occurs each month, an ovum or egg is discharged from the ovary and finds its way to the uterus through the Fallopian tubes.

Nothing further happens unless this ovum is fertilized, but following sexual intercourse, spermatozoa are deposited in the vagina. These cells are actively motile and pass rapidly into the uterus and up the Fallopian tubes where they meet the ovum. A single spermatozoön enters the ovum, and the ovum so fertilized passes into the uterus where it lodges in the mucous membrane and undergoes the development that ends in the birth of a new individual.

When we examine the process of fertilization more closely, we find an actual physical basis for the transmission of hereditary qualities. As stated before, both the ovum and spermatozoön are single cells. All cells consist essentially of a membrane containing a substance called protoplasm of which all animal tissues are built, in the midst of which is a kernel or nucleus. This nucleus is sharply defined from the protoplasm of the cell, and contains a network composed of a substance that has been

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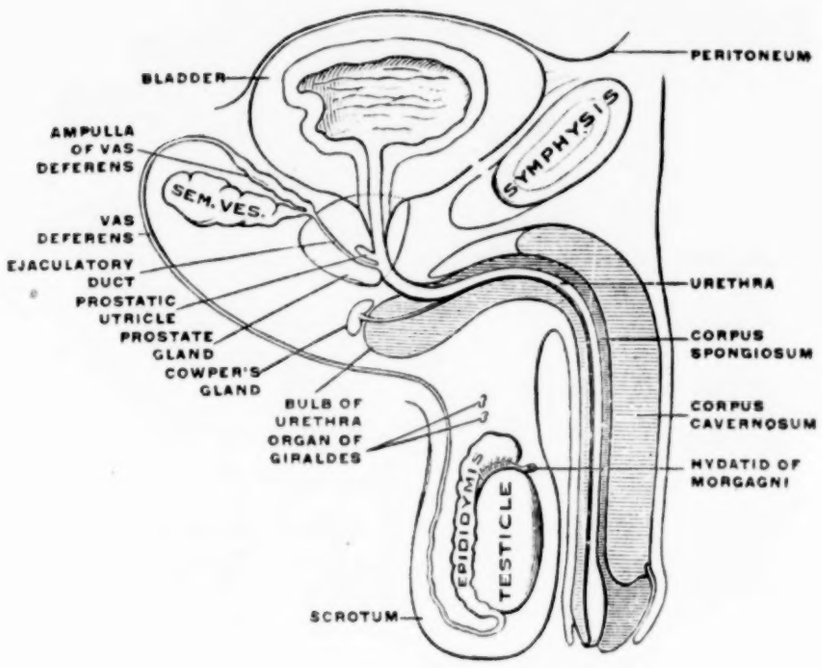

FIG. 1. — Diagrammatic representation of the male reproductive organs. (*From Gray's Anatomy.*)

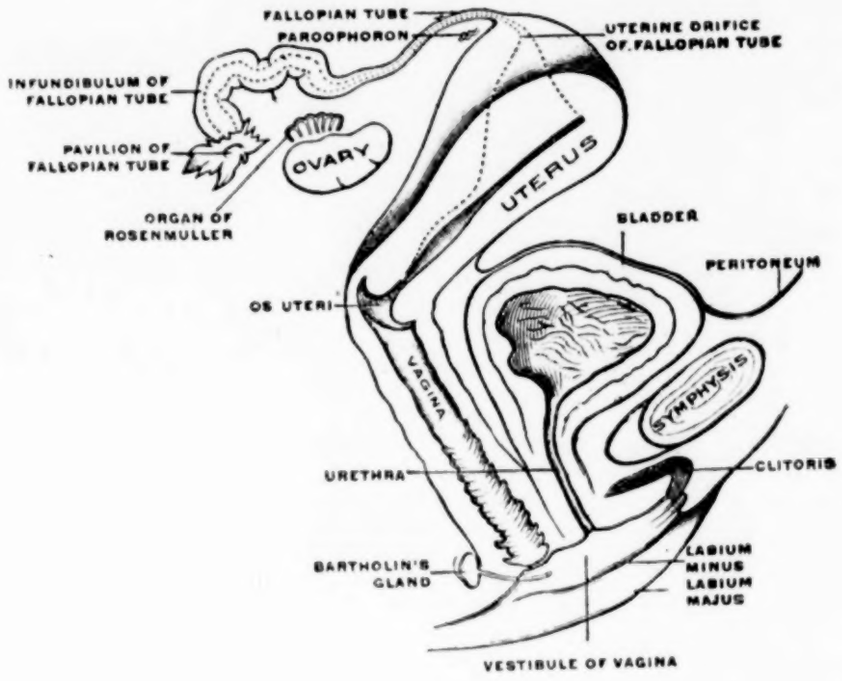

FIG. 2. — Diagrammatic representation of the female reproductive organs. (*From Gray's Anatomy.*)

called chromatin because it stains deeply with certain dyes. This nuclear chromatin is the regulator of all the vital activities of the cell, and in the sexual cells in addition contains and transmits the hereditary qualities.

Structure of the Sexual Cells. — The spermatozoön consists of three parts, the head, midpiece and tail. The tail, by an active lashing movement enables the spermatozoön to progress through the mucus lining the uterus and Fallopian tubes. The head is the nucleus and contains the essential chromatin. The ovum is simply a spherical cell with a centrally placed nucleus.

Fertilization. — As soon as one of these actively moving spermatozoa comes in contact with the egg, the head or nucleus penetrates the egg, the tail being left outside. (Fig. 3a.) The egg becomes thereby changed in some manner so that no other spermatozoön can gain entrance to it. After the head or nucleus of the spermatozoön has penetrated the egg, it approaches the nucleus of the egg (Fig. 3b and c), fuses with it, and so the chromatin from the male cell fuses with the chromatin from the female cell. The egg so fertilized now divides and forms two cells; but the chromatin arranges itself in such a way that each of these cells has received half its chromatin from the male spermatozoön, and the other half from the female egg. (See Fig. 3d and e.) And this process continues in every subsequent cell division, so that in the adult body every one of the billions of cells of which it is composed contains equal parts of chromatin derived from the father and from the mother. As this chromatin governs all the activities of the cells, it is clear that every new individual is a composite of qualities received from his father and from his mother.

But since both our fathers and our mothers are a result of the same process, and all their cells, including their sexual cells, contained equal parts of chromatin derived from our grandfathers and grandmothers, it is evident that our parents must have handed down to us some of the chromatin-bearing part of the hereditary qualities of our grandparents. Furthermore, this same process extends back to our more remote ancestors, so that each one of us is really a mixture of various ancestral traits. Sometimes as a result of this process we have inherited a good quality from one of our ancestors, and perhaps a bad quality from another.

From this you can see why it is a good thing to have a long line of good ancestors, and why many people are proud of their ancestors. For it is clear that the higher the proportion of good ancestors, the greater is the probability that good qualities will be inherited. And as there is no possible limit to the combinations that can be made of this ancestral stuff or chromatin in the sex cells, we see how the purpose of sex is accomplished in the production of a great variety of individuals since no two children even of the same parents can be exactly alike. The great number of possible combinations also explains why we occasionally have good individuals from a bad ancestry and worthless individuals of good ancestry.

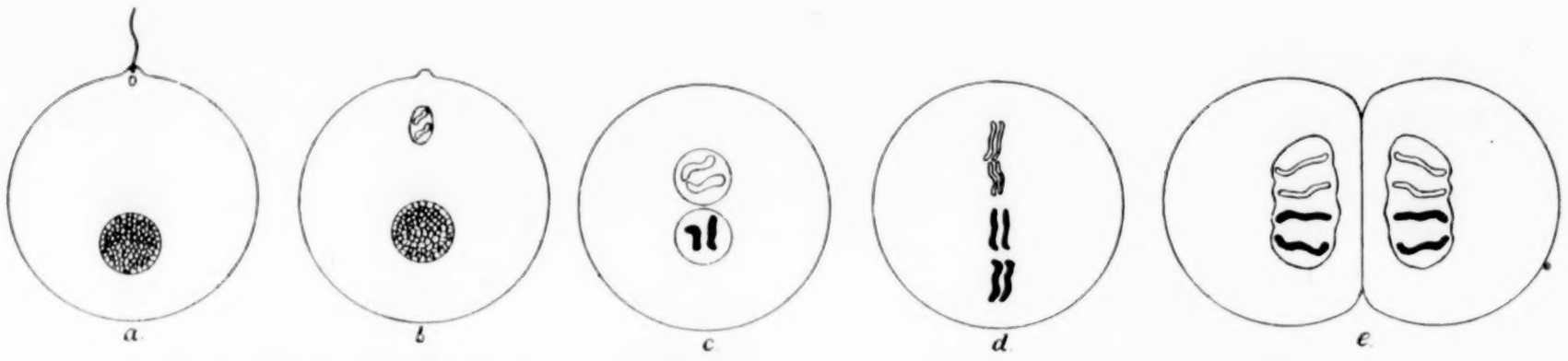

FIG. 3. — Diagrammatic representation of fertilization and the following segmentation of the ovum. Chromatin from the male element in light color; chromatin from the ovum heavily shaded.

(a) Head of spermatozoön entering egg.

(b) Male nucleus approaches female nucleus.

(c) and (d) Male and female chromatin becomes rearranged before cell division to insure equal distribution.

(e) Process of cell division showing that each cell receives equal parts of chromatin from the spermatozoön and the ovum.

VENEREAL DISEASE

Having briefly described the purpose and results of sexual reproduction, we now wish to discuss the diseases that ordinarily are transmitted during sexual intercourse with an infected person. There are three such diseases, namely, syphilis, gonorrhea, and chancroid. These diseases have usually been grouped under the title of "venereal diseases," although both syphilis and gonorrhea may be and frequently are transmitted in other ways.

Source of Infection. — All infectious diseases are caused by the growth in the body of minute parasitic organisms that for convenience may be called germs. These germs, for the most part, only grow and thrive when they gain access to people, and it is only in passing from one individual to another that some of them, for example the typhoid bacillus, may be found in water or food. Practically none of them live in the air. Therefore infected people and not things are the main source of infection. This is particularly true of the germs that cause syphilis and gonorrhea for they cannot develop anywhere except in people and die soon after leaving the body. Syphilis, gonorrhea and chancroid are contagious diseases; that is, the germs that cause them can only be acquired by intimate bodily contact with a person who is infected, or with bodily secretions that have recently left the infected body. To be infective such secretions must be very recent and still moist, for the germs of both syphilis and gonorrhea die as soon as the secretions that contain them become dried. These diseases are, therefore, as a rule only acquired by close bodily contact with an infected person.

Of all people, prostitutes are most liable to become infected with syphilis and gonorrhea, for it is evident that a woman who receives all who apply is certain to become infected sooner or later, and generally sooner. Careful medical examination of such women has shown that practically all are infected, and that the infection is acquired very soon after the women have adopted this life, and that they then continue to serve as sources of infection for several years. Prostitutes are, therefore, the main source of infection for men, and these infected men frequently infect their wives and children. The greater majority of those who suffer from a venereal disease today either received it from a prostitute or from someone who received it from a prostitute. Before we can eliminate syphilis and gonorrhea, or even reduce their incidence very materially, it will be necessary to suppress prostitution which is the main source of infection. It is, therefore, of some interest to determine the cause and origin of prostitution.

The Cause and Origin of Prostitution. — We arrive at sexual maturity at 14 or 15 years of age, whereas the mind is yet immature; and it will be from five to ten years later before years of discretion will be attained, economic independence can be achieved, and marriage will be possible.

Nature has implanted in the male a strong sexual appetite. Nature cares little for the individual but everything for the perpetuation of the race, and this strong instinct is undoubtedly necessary to carry out this purpose. The young man possesses this sexual appetite for all the years intervening between sexual maturity or puberty and the time when marriage becomes possible; and these are the very years when his judgment is poor and his character undeveloped. Very many young men at this time and older men who remain un-

married gratify their sexual instinct by a certain amount of promiscuous intercourse. The demand for this gratification has produced the prostitute or the woman who sells herself for the purpose. There are undoubtedly other contributory causes to account for prostitution. A large percentage of prostitutes are feebleminded or without moral sense. But it is clear that if the demand were not made, the supply would not be furnished. History indicates that prostitution is due to a deep-seated defect of human character and not to any fortuitous circumstances, for prostitution has been constantly present in all nations from the earliest civilization of which we have any record. It has been called " the oldest profession."

We do not know how syphilis and gonorrhea originated any more than we know when typhoid fever and smallpox first appeared in the human race. Like prostitution, syphilis and gonorrhea probably antedate written history. But we know that they are produced today by promiscuous intercourse, and we can guess that they were originally caused in the same way. It will now be well to give you a brief description of these three diseases.

Syphilis

Syphilis is caused by an organism belonging to the spirochetes called the Treponema pallidum. It is a very fine, corkscrew-shaped organism which is actively motile and is able to penetrate many tissues of the body. However, it does not often penetrate the unbroken skin, but usually gains access to the body through small abrasions of the mucous membranes. These infective organisms are present in all the lesions of syphilis, but particularly in the early ones, the chancre and the mucous patch.

Methods of Infection. — Syphilis may be acquired or congenital. In a majority of the acquired cases the infection is received through sexual intercourse with a person having the disease; but syphilis is often due to an accidental infection. Thus, a person who kisses a syphilitic or uses a drinking glass immediately after him may be infected. Persons having syphilis often have little sores in their mouths, called mucous patches, of which they may be unaware because they are painless. But they are extremely infectious, being full of spirochetes, and the saliva of such syphilitics is also infectious. In order to avoid such accidental infection it is a good rule to confine kissing to immediate members of the family, and not to put anything in the mouth that could have been used similarly by another person.

In congenital syphilis the child is born with the disease which has been received from an infected mother. Such children frequently die within a few weeks, and if they do survive are generally sickly. In very rare cases, the infection so received may remain latent for a number of years and manifest itself later in life.

Course of the Disease. — The first sign of acquired syphilis is usually a sore, the chancre, which appears on the spot where the infection was received. Thus it generally appears on the genitals, but in accidental infections it frequently appears on the lips, the fingers, and other parts of the body. This sore is not painful, but it is often very hard, does not heal readily, and commonly remains several weeks. It is a good principle to consult a physician about any sore on any part of the body that refuses to heal.

The typical hard chancre is usually recognized by an experienced physician, but unfortunately the primary sore may be so small and atypical as to pass unnoticed, or it may be confused with the sore produced by chancroidal infection. Therefore, when a sore of any kind appears on the genitals a physician should be consulted. There are two methods by which the doctor may determine whether the sore is a chancre, the initial lesion of syphilis:

1. The organisms that produce syphilis may be recognized under the microscope. The physician should, therefore, make repeated microscopic examinations of the serum expressed from the sore to determine whether these organisms are present. It is essential to the success of this examination that *the sore should be absolutely untreated*, for any local treatment usually causes the temporary disappearance of the organisms of syphilis.

2. The blood of the patient should be tested repeatedly by the so-called Wassermann reaction for at least three months from the time the sore appeared. It would take too long to explain this blood test, for it is quite complicated, but it is usually positive in cases of syphilis. Generally speaking, the microscopic examination is

more apt to be positive when the sore first appears and the blood test is more apt to be positive after the sore has lasted a long time; but both of these methods should be used in all cases.

If both of these methods have been conscientiously applied and are both negative, and the sore does not look or act like a chancre, the condition is probably not syphilis.

It is most important that the diagnosis should be made as soon as possible after the appearance of the sore because the earlier treatment is commenced in a case of syphilis, the better is the chance of securing a permanent cure. However, treatment should not be commenced until the diagnosis of syphilis is positively made, because this confuses the diagnosis and the patient will never know whether or not he has syphilis, and will be unwilling to take the treatment that would be necessary to secure a cure should the disease be syphilis.

After the sore has lasted for a time, the length of which varies in different patients, the organisms of syphilis gain entrance to the blood stream and the disease soon becomes general. The first constitutional symptoms are usually noticed within three months after the appearance of the chancre, and this is the beginning of the so-called secondary stage of the disease. At this time there may be some fever; but the commonest symptom is a reddish skin eruption which appears either as spots or raised papules all over the body. On those parts of the body covered with mucous membrane, such as the mouth or genitalia, small, painless grey sores appear, called mucous patches. These are the sores to which reference was made above, and these mucous patches and the primary sore or chancre are the most infectious lesions of syphilis. In addition to containing large numbers of the infective organisms, they are especially dangerous because the person who has them may not know that they are there, or even if he has noticed them, may not yet have found out that he is suffering from syphilis. Equally a prostitute may be in this very infectious stage for some time before she becomes aware of her condition, or may continue her traffic in spite of it.

At about this time, most patients receive some treatment, but usually an amount insufficient to produce a cure. The disease clears up and the patient is apparently well. But some months or years later the disease recurs in the so-called tertiary stage, and often the character of the disease has changed. The skin eruptions now have a tendency to form ulcers, and ugly sores that heal with difficulty may appear on any part of the body. Even the bones may be seriously affected; thus, the bridge of the nose is frequently destroyed, causing a repulsive deformity. The nervous system is also frequently involved, and the diseases known as locomotor ataxia and general paralysis of the insane are really cases of syphilis of the spinal cord and the brain. No part of the body is immune, and although syphilis may appear a very trifling matter when it begins, it is always serious. Unless it is treated most energetically by a competent physician, it usually means many years of suffering and invalidism, frequently disguised under some other name, and an early death between 40 and 50, at a time that ought to be the prime of life.

Gonorrhea

This is one of the commonest of infectious diseases. It is often thought a trifling matter, but as a cause of ill health and permanent disability it is little inferior to syphilis. The disease is caused by a biscuit-shaped micrococcus, called the gonococcus, which occurs in pairs, and in adults is always the result of impure sexual intercourse.

Course of the Disease. — The disease first appears as a purulent discharge from the urethra which in untreated cases may last for weeks or even months. In some cases the inflammation remains limited to the urethra but the tendency is for it to spread along all the genito-urinary passages. Thus, in the male, it often extends to the prostate gland, to the seminal vesicles and to the bladder. Quite frequently the inflammation extends to the tubules leading from the testicle to the seminal vesicles. These tubules are located back of the testicle, and the inflammation produces a painful swelling known as epididymitis. This condition often causes sterility in the male because the tubules become obstructed and spermatozoa can no longer pass through them. When the inflammation in the urethra finally heals, the damage is repaired by scar tissue which has a tendency to contract. In later years

these contracted scars are apt to cause an obstruction to the passage of urine, called a stricture. A large part of the urinary troubles of men are due to the results of old gonococcus infections.

In the female, the infection also spreads to contiguous parts, eventually reaching the Fallopian tubes. The chronic inflammation so produced often results in sealing up the orifices of these tubes and pus then collects in them. Such pus tubes often necessitate an abdominal operation for their removal. If the inflammation affects both sides, it may cause sterility in the female because ova can no longer pass through the constricted tubes.

In addition to this direct spread of the inflammation along the mucous surfaces, the gonococcus may gain entrance to the blood and so set up inflammation in widely separated organs. Thus it often causes an inflammation of the joints, called gonorrheal rheumatism, and this results in temporary or permanent disability. One form of heart disease is due to the same infection.

If the hands become soiled and the organism transferred to the eyes, it causes a very severe form of ophthalmia which frequently results in blindness. This eye infection may occasionally be acquired by using towels previously used by an infected person. Similarly, babies are infected during their passage through an infected genital tract. It has been claimed that about one-fifth of all blind people owe their misfortune to gonorrheal eye disease acquired at birth. Fortunately, we have found that this infection may be prevented by washing the new-born baby's eyes with a few drops of a silver nitrate solution. Most doctors now do this as a routine, and many infants' eyes have been saved by this procedure.

Chancroid

This infection is caused by a bacillus which is almost invariably acquired as the result of impure sexual intercourse. The growth of this bacillus produces sores on the mucous membranes where it was deposited. These sores may spread locally and cause much trouble, but the organism does not invade the blood, and therefore this disease is relatively unimportant as compared with syphilis and gonorrhea. However, it often does spread to the lymphatic glands in the groin causing them to swell and suppurate, when they are called buboes. This complication causes considerable disability and necessitates surgical treatment to remove the suppurating glands.

One of the worst features about a chancroidal infection is the fact that it is often very difficult to distinguish this sore from the chancre, which is the primary lesion of syphilis. To make this diagnosis early, or in time to afford a good chance for a permanent cure should the disease be syphilis, requires microscopic examinations and blood tests, as previously mentioned when describing the syphilitic chancre.

This very brief description of the venereal diseases has been given not only that you may know just what kind of diseases we are talking about, but also to enable you to realize that these infections are always of serious import. It is a common saying that a man who treats himself has a fool for a doctor. The use of patent medicines for these diseases is an absurdity which is already prohibited by law in some states. Should you ever suffer from any of these infections, be sure to obtain the best medical advice and treatment that you can secure. Thorough treatment will not only control the disease, but is the most effective means at our disposal for limiting the spread of such diseases. Even if you do not care anything about yourself, you do not want to pass on the infection to your friends, your wife or your children through neglect to take the proper treatment. And beware of the advertising quack. In the end you will lose time and money and health with him.

Prevalence of Venereal Disease

There are no perfectly satisfactory statistics regarding the prevalence of syphilis and gonorrhea. Great authorities like Fournier have estimated the prevalence of syphilis in large cities at from 10 to 15 per cent., but such estimates are very unsatisfactory because the prevalence of syphilis depends upon age, sex, marital condition and social status. It would take too long to give here even a summary of the mass of statistics that has been accumulated, and it will be sufficient for our purpose to say that from 50 to 100 per cent. of prostitutes have been shown to be infected with syphilis; that among the patients in various hospitals, from 10 to 30 per cent. have been

found to suffer from syphilis; that in all probability about 20 per cent. of the young men of the class that enlist in the army have been infected; while among unmarried women of good habits, the disease is quite rare. Among married women a fair percentage have been infected by their husbands. Probably 2 or 3 per cent. of children have been infected congenitally. Among negroes there are at least twice as many cases as among the white race.

With regard to gonorrhea, European authorities have estimated that 80 per cent. of all men have or have had gonorrhea. Morrow and other authorities in the United States believe that from 50 to 60 per cent. of all men have had gonorrhea. Among women, practically all prostitutes are infected and have chronic gonorrhea. And while gonorrhea is practically nonexistent among unmarried women of good habits, it is unfortunately no rarity among respectable married women who are infected by their husbands. And in asylums, homes and hospitals for little girls, when one case of the disease is introduced, it spreads like wildfire by indirect contact with sponges, thermometers and other objects, including the hands of the nurses, without any suspicion of sexual contact. Fortunately among adults this method of spread practically does not exist or everyone would suffer.

Colonel P. M. Ashburn, M.C. has just completed an investigation of the draft statistics, and has found that Class A men of white race and military age resident in the United States in the year 1918 showed at the time of their examination for service a venereal infection rate of approximately 3 per cent., while the negro infection rate shown in the same way was 20.85 per cent. These figures are the most comprehensive that have ver been gathered and in my opinion indicate with great exactness the percentage of active infections among men of the population of military age.

Whatever criticisms may be leveled at the statistics that have been gathered, it is sufficiently apparent that both syphilis and gonorrhea are very common infections; that gonorrhea is probably at least four times as common as syphilis; that together they produce more suffering, disability and death than tuberculosis or any other one disease; and that, heretofore, they have entirely evaded sanitary control.

Prevention

And now the question arises, how can we prevent these diseases? For you, individually, the answer is absurdly simple — namely, abstain from all sexual intercourse until you are married and then be faithful to your wife; and take those simple precautions about kissing, and the use of common drinking cups, towels, and other objects that have already been mentioned.

However, experience and the wide prevalence of venereal diseases have proven that chastity among men before marriage is the exception and not the rule. A questionnaire was sent to the soldiers in France, and from the replies it was learned that only about one-third had abstained from sexual intercourse while in France. You must not suppose that this was a bad record for the soldiers in France. As a matter of fact, it represents unusual self-denial, for there is excellent reason for believing that this was an improvement on the usual sexual habits of the same men at home.

We do not in the least approve of this state of affairs, but it would be foolish to close our eyes to it. Until men have learned to refrain, it is most desirable that infection should be prevented after exposure has taken place. There is a method of treatment that will prevent infection with a high degree of probability if it is used at once after exposure, and this method has been used in the army with good results. It consists of scrupulous cleanliness, the injection of a soluble silver salt to prevent gonorrhea, and an inunction of 33 per cent. calomel ointment to prevent syphilis. This is not the time or place to describe this method further, but if you have been misguided it will probably pay you to apply to some physician for this treatment.

Organized attempts by the community to reduce the prevalence of syphilis and gonorrhea are all aimed to secure one result, the elimination of the sources of infection. This problem may be approached from two angles:

1. The elimination of prostitution.
2. The treatment of all those infected.

The Elimination of Prostitution. — This is especially desirable because it can hardly be questioned that prostitutes constitute the endemic center and main source of infection. It will be a long time before prostitution can be eliminated, if ever it can

be. But experience during the war has shown that it can be suppressed and reduced to a minimum by any community that desires to do so. But little good is accomplished by passing ordinances and spasmodic efforts in this direction; a constantly maintained effort to suppress the evil is required to diminish the traffic and the resultant infections. Such an effort requires the intelligent and willing cooperation of all citizens.

Treatment. — Effective treatment of all those infected would eliminate all sources of infection. Even those who could not be cured would be rendered incapable of transmitting infection. But the number of those infected is so large and effective treatment has been so expensive that the majority of those infected do not receive treatment early enough or in sufficient amount. To meet this situation most hospitals, many cities, and the United States Public Health Service have established clinics where advice and treatment can be secured by those unable to pay a private physician. Ordinarily, better advice and treatment may be secured at these clinics than can be given by the average physician who is not a specialist in these diseases.

Education. — But before the community can make much progress either in suppressing prostitution or in securing treatment for those infected, the education of the people is necessary. This is a democracy and any action of permanent value must be taken by the people themselves and not merely by some temporary official. All should know the nature and prevalence of syphilis and gonorrhea, their cost, the ways by which infection is acquired and the methods of prevention. They will then insist on the suppression of prostitution, and those infected will voluntarily try to secure treatment. Moreover, education should develop character so that the average man would restrain instead of indulging his appetites.

What argument can we use to induce men to restrain their sexual appetites? No manly man wishes to ruin an innocent girl, and an innocent girl is the only one who cannot transmit disease. Any woman who shares her favors is sure to become infected. Men are not afraid of infection for themselves. The late war has shown that heroism is not unusual; bravery is the rule and cowardice a rare exception. Fear of any kind is unmanly, cowardly, and if a man is not afraid of a bullet or of sudden death, why should he fear a disease that at most can but kill him and that after all is quite amenable to treatment? To base our appeals on a personal fear of infection is totally to misunderstand men.

But most men wish to be square. They demand a square deal for themselves and wish to treat others similarly. Most men expect to marry some day. It needs no lengthy argument to convince any man that it is not giving a girl a square deal to infect her with a disabling disease, and when a man has once suffered from syphilis or gonorrhea it is most difficult to say how long the infection will persist. Syphilitics have infected their wives after the disease has lasted ten years and more, and gonorrheal infections may also persist for several years. When either disease has been acquired within the year, the innocent wife is almost always infected. If the mother is infected with syphilis, she almost invariably infects her children. Commonly, she first suffers abortions; then she probably has a still-born child; and finally children that live, but usually with the marks of the disease. We have already said enough of the disabling effects of both diseases. Surely any man who considers this danger to wife and children will admit that the double standard of morality is indefensible.

A man can control his appetites perfectly well if he makes up his mind to do so. When a man does not, it is usually because he is not convinced of the desirability. Many a man has been a hard drinker until some episode forced him to realize that he was besotted, and he has then stopped drinking at once. The sexual appetite can be controlled when the necessity for such control is realized.

Fathers and mothers should investigate the health and sexual habits of the young men who wish to marry their daughters at least as carefully as they investigate their financial status. The time is coming when this will be done, and when any young man who cannot face the family doctor will be *persona non grata*.

In conclusion, it should be said that it would be utterly impossible to cover this entire subject in one lecture. But it is to be hoped that the main points have been touched without wearying you.

TWENTY YEARS' EXPERIENCE OF THE NOTIFICATION OF INDUSTRIAL DISEASES*

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IN factory legislation in Great Britain from about 1850 to 1906, first safety — that is, accident prevention by guarding of machinery — and subsequently, from about 1870 onwards, industrial disease prevention became more and more prominent. Public feeling was stirred by the seriousness of lead poisoning with cases of sequelae of blindness and paralysis in white lead and pottery manufacture, and by the suffering from "phossy jaw" in the manufacture of lucifer matches. Notable features of the factory legislation between 1878 and 1895 were the provisions made to control dangerous trades by means of special rules and to obtain early knowledge of certain occupational diseases — such as poisoning by lead, phosphorus, arsenic and mercury, and anthrax — by placing the obligation to notify them on medical practitioners and occupiers. Finally, under the Workmen's Compensation Act, 1906, twenty-five occupational diseases were scheduled to which the act, with differences depending on the essential distinction between accident and disease, applies. Some one with medical knowledge was required who would be able to follow up the cases reported and suggest remedial measures, and to this I owe my appointment. I would like to emphasize this point — the absolute necessity that such work should be done by a medical man and not by a layman, or, at any rate, that the final decision in any investigation made by a lay inspector should rest with a medical inspector.

The Factory and Workshop Act of 1895 required that every medical practitioner attending on or called in to visit a patient whom he believed to be suffering from poisoning by lead, phosphorus or arsenic or from anthrax, contracted in a factory or workshop, should notify it to the chief inspector of factories at the Home Office, and a similar duty was imposed upon the occupier to report every case to the district inspector of factories and to the certifying surgeon. In 1901, poisoning by mercury was added to the list of reportable poisonings, and still more recently, in 1917, toxic jaundice from tetrachlorethane, T.N.T., or any other poisonous substance was also added. We shall deal briefly later with further possible extensions. Since 1898 practically all the reports, and they must have numbered some 25,000, have passed through my hands, and I want today to give you the results of that experience — results of great value, despite the fact that the knowledge gained concerning each industry in which the poisons are used has been, and is likely to continue to be, somewhat incomplete.

In form, there is close similarity between this section dealing with industrial poisonings and that in the Infectious Diseases (Notification) Act, requiring the medical practitioner and the householder to notify the medical officer of health of every case of scarlet fever, diphtheria, etc. It is common knowledge that as regards the householder this enactment has been allowed to become a dead letter (although it still remains on the statute) because he is thereby credited with medical knowledge which cannot be expected of him. The case of the occupier of a factory is, perhaps, not quite on all fours with that of the householder because employing persons, as an occupier does, for his own profit on work in which poisonous substances are used, his duty to take practicable precaution is apparent, and should injurious effects show themselves in one of the workers his share in the responsibility for this must, within reason, be brought home to him. In a case of chronic lead poisoning or in a case of external anthrax, the occupier can have no difficulty in complying with the requirement of the act, but it is obvious that of the two, the medical practitioner's notification is the more important.

Notification of industrial disease is a more difficult matter than is notification of infectious disease, and if care is not taken the usefulness of the requirement may be greatly impaired. The objects in view are to obtain knowledge of prevalence, with a view to treatment and prevention — in

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other words, to obtain a clue to conditions over which the inspector or the state can exercise control. One difficulty of the practitioner in notifying industrial disease is that, with the exception of anthrax, the poisonings he is expected to notify do not present the same unmistakable signs that acute infectious diseases like smallpox or scarlet fever do. The number of cases which on investigation have to be marked as "wrong diagnosis" — fully 7 per cent. — are sufficient indication of the difficulty in complying with the notification section of the act. No absolute definition of what constitutes poisoning by lead, phosphorus, arsenic or mercury is possible, and each practitioner in reporting what he believes, must form his own standard in the same way as he forms his standard of what constitutes ptomaine poisoning or fish poisoning. The point is that, owing to the slow onset of these insidious industrial maladies, the patient passes through a stage of absorption which does not amount to poisoning and yet in which the stigmata of the particular compound are apparent. Take, for example, the blue line of the gums from lead absorption, the tremor from mercury, and the cyanosis of the lips from T.N.T. The medical practitioner has, therefore, in the first place, to make a differential diagnosis between the symptoms in lead poisoning and those of the commonest everyday ailment — headache, anemia, rheumatism, abdominal pain — or in a case of arsenical rash from the rash of idiopathic eczema, and secondly, he has to say whether absorption is so advanced as to justify him in notifying it as poisoning. A man presenting himself for treatment for bronchitis, for instance, who is discovered to have a blue line, should not be reported as a case of lead poisoning unless there are definite symptoms attributable to it, the blue line being regarded merely as evidence of work in lead. Common sense, however, points to the desirability of fixing in some way the degree of severity of symptoms which should lead to notification, and there are probably few medical men who would deny that symptoms necessitating absence from work and appeal to a doctor constitute sufficient grounds for notification.

But the mere presence of symptoms requiring medical assistance is not quite enough to settle the question of notification. Take, for instance, T.N.T. poisoning. This disease is so protean that it will show itself first as dermatitis; secondly, as gastritis; thirdly, in effects produced on the blood (formation of methemoglobin, with consequent reduction of its oxygen-carrying power); fourthly, in the specific destruction of the liver cells characterized by jaundice, a grave condition; and fifthly, in the rare form of aplastic anemia characterized by destruction of the red marrow of the bones with resulting great diminution of the red and white blood cells. These various symptoms are by no means always distinct one from another. With exception of the first, they are all to be described as T.N.T. poisoning, and they may merge one into the other — cyanosis may be present with gastritis or toxic jaundice, jaundice may be present with aplastic anemia — they may be interchangeable or concomitant manifestations of the same poison. I have dealt with them separately in order to insist that, for the purpose of statutory notification, all the forms are not equally important, although obviously the management of a factory should be aware of all cases. But when statutory notification has to be made, the medical practitioner and the occupier require a definite symptom to guide them. Publication of statistics of notifications of T.N.T. poisoning would, in my opinion, be unreliable, as they would simply refer to the number of T.N.T. workers seeking medical treatment for any and every complaint. But figures published monthly of the incidence of toxic jaundice furnish a real indication of serious illness due to the compound, calling in each case for inquiry as to causation and observance of precautions in the particular process at which the affected person was employed. This was the procedure adopted in England during the war. It reduced expense to the state, relieved the medical practitioner and occupier of doubt as to when to notify, and saved endless worry and the waste of time which would have resulted had a wider requirement been imposed. The same remarks apply to dope poisoning, which has no medical entity to be made notifiable. To attempt to notify dope poisoning would simply mean that all persons engaged in doping, who were absent from work from no matter what cause, would be reported as cases of dope poisoning.

In any further extension of notification of industrial disease, therefore, I would urge the desirability of scheduling a clearly

defined symptom as the criterion for notification. For instance, in order to obtain knowledge of the serious cases resulting from contact with tar, pitch and paraffin, and to avoid the very large number of slight cases of rash, pimples and boils from which at one time or other nearly all suffer who come into contact with the substances named, I would specify as a criterion for notification "epitheliomatous ulceration of the skin." Similarly the term "chrome ulceration" would suffice to exclude notification of the very slight cases of irritation set up on contact with bichromates. Indeed, I think we should be very much in the same position as we are now with regard to our knowledge of lead poisoning if we had limited notification to cases of lead paralysis. For statutory notification I hold that good samples are sufficient to obtain all the knowledge necessary on which to take action.

What I have said mainly in regard to difficulties in the notification of lead poisoning holds in even greater force with regard to arsenic poisoning. Arsenic poisoning, as you know, occurs in two distinct ways: (1) from inhalation of, or contact with, the dust of arsenic, showing itself in eczematous ulceration of the skin, especially where the dust alights on folds of the skin, and (2) from inhalation of arseniuretted hydrogen gas, producing severe constitutional symptoms as a result of the destruction of the red blood cells, and subsequent jaundice. Now the term poisoning presupposes constitutional symptoms due to disturbance of the systemic circulation, and effect on remote organs. Can a mere local effect such as irritation of the skin be regarded as poisoning by arsenic? I leave you to determine this point for yourselves. My own private opinion is that local effects set up by arsenic on the skin are not notifiable, but cases which are notified I follow up as though they were. Also, the classical symptoms of mercury poisoning, when fulminate of mercury is in question, are hardly ever observed. What is seen is altogether unclassical, namely, the appearance of conjunctivitis and irritation of the skin, not unlike that produced by arsenic; and hoarseness, the result of inhalation of fulminate of mercury. Unless constitutional symptoms were present also, I, personally, would not regard these effects of mercury as notifiable.

The notification section of the act, you will observe, is limited to poisoning contracted in a factory or workshop. Thus, lead poisoning contracted from drinking water is not notifiable, nor, as a rule, is poisoning in house painters notifiable since they do not usually contract poisoning in factories. Fortunately, however, medical practitioners do not split hairs over this point in regard to house painters, because the number of notifications received in this way exceeds that in other lead industries. These cases yield the only statistical information we have, apart from copies of death certificates, of lead poisoning among house painters and plumbers. Similarly, arsenic poisoning contracted from beer is not notifiable.

In order to leave no stone unturned in obtaining information from all sources, we have, in addition to the knowledge we receive from notifications, an arrangement with the registrar general, whereby notices of all death certificates on which lead poisoning is entered as directly or indirectly the cause of death are received by the chief inspector of factories. All deaths of industrial origin are included in the return, and the details recorded in each annual report. There has been difficulty in making the requirement known to all medical practitioners, notwithstanding the fee of 2/6 attached to it. The reason, I think, is this: The medical man is constantly reminded of his duty to notify ordinary infectious disease because it is an incident of his daily occupation. On the other hand, the majority of medical practitioners do not see a case of notifiable industrial disease from one year's end to another, and when they do, it is an accident and not an incident of their profession, and consequently they forget to notify or, perhaps, the necessary form for doing so is not at hand.

Principal Results Obtained from Notification

Now what are the principal results obtained from notification? Take first the cases of lead poisoning as shown in Table 1. We will deal with the figures for the years 1900 through 1914. The war brought about such changes in industry that special explanation of the subsequent figures, from 1915 to 1918, is required. Between 1900 and 1914, however, the figures are strictly comparable. There is first of all a gratifying

TABLE 1. — NOTIFICATION OF POISONING BY LEAD, PHOSPHORUS, ARSENIC AND MERCURY, OF ANTHRAX AND OF TOXIC JAUNDICE

Disease and Industries	Reported Cases *										
	1918	1917	1916	1915	Average 1912–14	Average 1909–11	Average 1906–08	Average 1903–05	1902	1901	1900
Lead poisoning	*144*[11]	*317*[21]	*348*[21]	*381*[21]	*522*[33]	*576*[35]	*619*[30]	*601*[23]	*629*[14]	*863*[34]	*1,058*[38]
1 Smelting of metals	15[1]	46[1]	39[4]	47[1]	39[4]	49[4]	45[2]	31[1]	28	54[3]	34[1]
2 Brass works	1	3[1]	3	—	7	7	9	10[1]	5	6[1]	3
3 Sheet lead and lead piping	—	3	3	3	6	8[1]	9	9	12	17	17[1]
4 Plumbing and soldering	24[2]	34	12	17[2]	32[3]	30[1]	21[2]	24[2]	23[1]	23	9
5 Printing	8[1]	6[3]	12	27[3]	27[1]	29[2]	24[2]	16[2]	19	23[1]	18[2]
6 File cutting	2	4[1]	8[2]	2	13	12[1]	11[1]	19[2]	27	46[7]	40[3]
7 Tinning	2	2	4	3	11	17	18	13	11	10	5
8 White lead	—	17	18[1]	40	27[1]	36[2]	86[3]	105[1]	143[1]	189[7]	358[6]
9 Red lead	2	13	15	8	5	11	8	9	13	14	19
10 China and earthenware	11[1]	15[7]	23[7]	26[4]	56[10]	76[7]	109[8]	96[3]	87[4]	106[5]	200[8]
10a Litho-transfers	—	—	—	—	1	1	6	4	2	7	10
11 Glass cutting and polishing	1	—	1	—	2[1]	3[1]	4[1]	2	8[2]	11[3]	7
12 Vitreous Enamelling	—	1	5	5[1]	8	14	6	3	3[1]	9	11
13 Electric accumulators	16	27[1]	44[1]	64	41	27[1]	24	29	16	49[1]	33
14 Paints and colors	3	10	22	12	21	26[1]	32	43[1]	46	56	56[1]
15 Coachbuilding	12[3]	21[2]	33	39[5]	71[4]	90[6]	75[4]	60[4]	63[1]	65[4]	70[5]
16 Shipbuilding	9[2]	19	25[3]	18[2]	32[3]	28[3]	21[1]	35[1]	15[1]	28[1]	32[2]
17 Paint used in other industries	15	20[1]	20	16[2]	45[2]	50[1]	44[2]	41[2]	44[1]	61	50[5]
18 Other industries	23[1]	76[4]	61[3]	54[1]	77[2]	62[3]	67[3]	54[1]	64	89[1]	86[4]
Phosphorus poisoning	*3*	*3*	*2*	*3*	—	*1*	*1*	*1*[1]	*1*[2]	*4*	*3*
Arsenic poisoning	*3*[1]	*30*[5]	—	*3*	*4*	*7*	*12*[1]	*4*	*4*	*1*	*22*[3]
Mercurial poisoning	*9*	*17*	*18*	*6*	*14*	*10*	*7*	*6*	*8*	*18*	*9*
Toxic jaundice	*34*[10]	*190*[44]	*206*[57]	—	—	—	—	—	—	—	—
Anthrax	*72*[8]	*93*[12]	*105*[16]	*50*[8]	*57*[7]	*57*[11]	*57*[13]	*52*[13]	*38*[9]	*39*[10]	*37*[7]
Wool	53[5]	57[8]	79[10]	27[3]	33[5]	30[5]	22[5]	22[6]	12[2]	6[4]	9[2]
Horsehair	4[2]	3[1]	6[3]	2	6	7	12[3]	9[2]	10[2]	9[1]	12[3]
Handling of hides and skins	14[1]	29[2]	18[3]	18[4]	14[1]	17[3]	15[3]	16[3]	11[5]	20[5]	9[1]
Other industries	1	4[1]	2	3[1]	4	2[1]	93	6[3]	5	4	7[1]

* The principal numbers relate to cases, the small figures to deaths. Fatal cases not reported in previous years are included as both cases and deaths.

diminution in the total number of cases; they have diminished almost exactly by one half, from 1058 to 522. Selecting particular industries, notice the reduction in the figures for white lead from 358 to 27; in the pottery industry, from 200 to 56; in the manufacture of paints and colors, from 56 to 21; in file cutting, from 40 to 13.

Now like an honest surgeon I wish to describe the failures as well as the successes. Moreover, from the failures perhaps most is to be learned. The figures for smelting, you will see, show rather an increase as do those for printing and electric accumulators, while for coachbuilding, for shipbuilding and for paint used in other industries they are almost stationary. Now why is there the contrast between these figures — those for the first mentioned industries showing such a remarkable drop, the others showing little or no improvement over a number of years? The answer, in my opinion, is simple and of profound and fundamental importance. Essentially, the cause is that in the satisfactory cases locally applied exhaust ventilation to remove dust and fumes at the point of origin can be effectively applied, and in the others it cannot. On the practical side there is little more to be learned about lead poisoning, and you can accept the statement as axiomatic that all lead poisoning arises from inhalation of dust and fume. This removed or prevented, there will be no lead poisoning. You might demur to this statement in regard to coach and house painting, but in these industries it is the sand papering of painted surfaces which is responsible for most of the absorption. I do not wish to be misunderstood and when, in enunciating a principle, I speak thus dogmatically, I do not wish at all to underrate subsidiary causes for minimizing poisoning and so maintaining efficiency, such as cleanliness, and periodic medical examination to detect the earliest signs and thus to direct attention to unguarded points in the process from which dust or fume *must* be coming off if signs of lead absorption are present. Labor-saving devices, especially in the white lead industry, have helped materially, and in the china

and earthenware industry the most recent drop is due to successful research in using a lead glaze with as much lead content as before, but in a form insoluble in the gastric juice.

When you are up against figures which, over such a number of years, show little or no diminution in industries where white lead paint is used, there can clearly be only one remedy and that is the substitution of a zinc oxide paint or of some innocuous compound in place of white and red lead. In smelting of metals and in making electric accumulators the bulk of the poisoning is undoubtedly due to dust and fume but the application of exhaust is not impossible, and, with meticulous attention to detail in the application of the ventilation, the figures should be brought down as much as they have been in the case of white lead and pottery manufacture.

When you turn to the figures from anthrax, you will see that the cases of illness show a definite tendency to rise in all the industries except in the horsehair industry where they have definitely fallen. The figures for wool are notably increased. Now what is the meaning of this increase? To few subjects has more attention been given than to the prevention of anthrax in industry. Special rules and regulations have governed the wool industry for a quarter of a century, requiring, among many other things, downward exhaust ventilation in opening and sorting. This has obviously been of little or no avail. Why? Because effort has been directed to minimize the effect and not to get at and destroy the cause. That has hitherto been considered too difficult — the anthrax spores being among the most resistant of organisms. Saturated steam, effective certainly in destroying the spores, unfortunately destroys at the same time the material for manufacturing purposes. Still the situation could not be left as it was and during the war, I am glad to say, much has been done. Largely as a result of the work of Mr. G. E. Duckering, an inspector of factories and a skilled chemist, working in conjunction with the bacteriologist of the Anthrax Investigation Board at Bradford, a method capable of disinfecting the wool on a commercial scale and as a business proposition has been elaborated. Already this year a disinfecting station is being erected in Liverpool. I do not refer more to this subject as I am dealing with it in a later lecture.

In the horsehair industry the diminution of cases of illness is probably due to the fact that the disinfection of horsehair from China, Siberia and Russia has been prescribed in regulations since 1907.

Similarly, the diminution in cases of toxic jaundice has been due to the recognition of the cause as being absorption through the skin. When once this was recognized, meticulous attention to detail in cleanliness of the skin and cleanliness in the method of working reduced the poisoning.

The figures for phosphorus poisoning have fallen between 1900 and 1914 because of the act passed in 1908 prohibiting the use of white phosphorus in the manufacture of lucifer matches, and the figures for arsenic poisoning have fallen between 1900 and 1914 because there was a successful application of locally applied exhaust ventilation to remove the dust in the packing of emerald green. Nearly all the twenty-two cases in 1900 were cases of dermatitis and ulceration of the skin caused by that compound.

So far no impression has been made on the number of cases of mercurial poisoning. Metallic mercury, fortunately, is not very widely used in industry.

I said that I would speak of the figures for the years between 1915 and 1918 separately. The effect of the war can be read into them readily and they have interest, showing, as they do, how important branches of industry were directly or indirectly affected by the dislocation of work, an increase of cases occurring in one industry and a decrease in another. The calling up of men removed a class who might have been affected had they remained, and their place was taken by women in a number of industries. Lead usually takes several months or years to show its effects and there has been no considerable increase in the number of women reported as suffering from lead poisoning. This may be due to the fact that they have not worked long enough, but it may be equally true to say that the greater precautions now taken in the removal of lead dust by exhaust ventilation have made the processes in which the women are employed much safer than they used to be.

The figures for trades such as building, carriage and motor car construction, and porcelain enamelling show marked diminution, and especially is this the case with house painting. These trades practically

TABLE 2. — ANALYSIS OF REPORTED CASES OF LEAD POISONING SHOWING SEVERITY AND NUMBER OF ATTACK

Year	Severity of Attack										Number of Attack									
	Severe		Moderate		Slight		Not Stated		Total		1st		2d		3d or Chronic		Not Stated		Total	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Tot. 1900–09 Cases	1,588	204	1,389	269	2,522	496	138	32	5,637	1,001	3,800	799	871	119	758	46	208	37	5,637	1,001
Per Cent	28.2	20.4	24.7	26.9	44.7	49.5	2.4	3.2	100	100	67.4	79.8	15.5	11.9	13.4	4.6	3.7	3.7	100	100
Tot. 1910–14 Cases	450	27	790	117	1,184	141	27	6	2,451	291	1,863	260	305	17	251	8	32	6	2,451	291
Per Cent	18.4	9.3	32.2	40.2	48.2	48.5	1.1	2.1	100	100	76.0	89.4	12.5	5.8	10.2	2.7	1.3	2.1	100	100

stopped during the war. Although not notifiable, the number of cases among house painters of which we obtained knowledge prior to 1915 was always higher than in any other industry. Thus, in 1913 there were 291 cases, with 37 deaths; and in 1912, 256 cases with 47 deaths. The figures fell in 1916 to 72 cases, with 20 deaths; in 1917, to 57 cases with 18 deaths; and in 1918, to 35 cases with 20 deaths. Other painting operations were not affected to the same extent. Indeed, the figures for "paints used in other industries" show little or no change. During the war there was less printing, owing to the shortage of paper. This is reflected in the figures from 1916 onwards.

From an early date in the war, lead was controlled by the Ministry of Munitions. On its use for government work, including smelting, conversion into shrapnel, the manufacture of electric accumulators, sheet lead and lead piping required for the manufacture of acids, etc., no limits were placed, but wherever private orders were in question the supply was restricted. The heavy pressure placed on firms where smelting of lead was carried on is shown in the figures. Of the total 147 cases, thirty-two were contracted in the extraction of spelter. The comparatively very high figures for plumbing and soldering were undoubtedly due to the great amount of lead burning required in erecting the acid chambers, vats, etc., in large munition factories. The conditions under which the men engaged had to carry on their work, exposed as they were to acid fumes and other defective conditions, were often trying. The manufacture of electric accumulators for submarines and other purposes connected with the war was carried on at very high pressure night and day, and accounts for the high figure reached in 1915.

Figures referring to white lead, red lead, and paints and colors, may be grouped together. The absence of a single reported case of poisoning from the manufacture of white lead in 1918 is remarkable, seeing that in 1899 there were 399 cases. The manufacture was rationed to about 50 per cent. of the pre-war output. The works were closed entirely in 1917 for six months but in 1918 activity in them was considerable — when quantities were manufactured equal to about 60 per cent. of that in pre-war time. Red lead was in great demand and the figures in 1916 and 1917 show it. The amount of lead allowed in glazing pottery represented about 50 per cent. of that used in ordinary times. In considering the use of lead in the various industries

TABLE 3. — ANALYSIS OF REPORTED CASES OF LEAD POISONING SHOWING MAIN SYMPTOMS

Year	Main Symptoms													
	Gastric		Anemia		Headache		Paretic		Encephalopathy		Rheumatic		Other	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Total 1900–09 Cases	4,512	779	1,473	325	539	255	1,190	153	200	62	568	107	176	16
Per Cent	80.0	77.8	26.1	32.5	9.6	25.5	21.1	15.3	3.5	6.2	10.3	10.7	3.1	1.6
Total 1910–14 Cases	1,853	225	825	112	303	81	333	15	53	10	293	28	186	12
Per Cent	75.7	77.3	33.7	38.5	12.4	27.8	13.6	5.2	2.6	3.4	12.0	9.6	7.6	4.1

it has to be borne in mind that not only were we producing material for our own country, but that France and the allied states also relied on us.

I thought it would be interesting to interpose these details as to the principal results, but I ought now to go back and explain precisely how they have been obtained.

The notification of the practitioner gives, as a rule, no indication of symptoms beyond his belief that the case is one of lead poisoning. Details of a case are obtained in an examination of the patient, a day or two later, by the certifying surgeon, and the knowledge that we have obtained in the course of years is based entirely on a close analysis of the reports of certifying surgeons made on a prescribed form. Only when the cases are carefully analyzed, distinguished according to their severity, to the length of time of exposure to the injurious action of lead, to the number of previous attacks, to the nature of the symptoms, and to the precise occupation is their value brought out.

In the year 1910 I analyzed nearly 7,000 certifying surgeons' reports on lead poisoning, and again in 1915 over 2,700 obtained in the five years, 1910–1914, noting carefully, first, increase or decrease in the recorded number of cases in each one of eighteen classes of lead industries; secondly, the severity of the attack; thirdly, the number of the attack (whether first, second or chronic); and fourthly, main symptoms. These analyses are shown in Tables 2 and 3. Very frequently a combination of symptoms — colic, anemia, and varying degree of paralysis — is stated, and when this is the case each one of them has been entered under the appropriate heading. The total number of symptoms, therefore, greatly exceeds the number of cases, but this does not affect the correctness of the estimate of each one as a proportion of the total number reported. The reports, it need hardly be said, do not give detailed information such as can be gained from hospital records. Especially is this the case with the symptoms of paralysis and encephalopathy.

The cases include all attacks reported in a year and not previously reported in the preceding twelve months. By adopting this course no name appears twice in the same year. Taking the figures as a whole, the most noticeable feature is the reduction in the number of severe cases in the later period. And the fall in the number of severe cases is accounted for by the noticeable diminution of paralysis of the forearm, and also happily, by diminution in the most serious form which lead poisoning can take — affection of the brain — spoken of as encephalopathy. Encephalopathy can only be due, in my opinion, to inhalation of large quantities of lead dust, and one case of encephalopathy should, to my mind, be the cause of a far more searching inquiry than ten cases of colic.

The figures I have given you sufficiently emphasize the value to be obtained from notification of clearly defined industrial diseases when sufficient time is given by a medical man to the elucidation of the subject.

BOOK REVIEWS

Industrial Nursing: A Handbook for Industrial and Pupil Nurses and for Employers of Labor. By Florence Swift Wright, Supervisor, Bureau of Child Hygiene, New Jersey State Department of Health, formerly Secretary of the Benefit Association of the Employees of John Wanamaker, New York; and formerly in charge of Industrial Nursing for both the Cheney Brothers' Silk Mills and the Clark Thread Company. Cloth. New York: The Macmillan Company, 1919.

At this time of great industrial unrest, it was important that someone should present the subject of industrial nursing, and it is most fortunate that it has come from a woman who speaks out of a long and varied experience and with an appreciation of standards and a vision of the future for the industrial nurse.

A brief historical sketch of the growth of industrial nursing is given, followed by a discussion of the qualities and training necessary to equip a nurse to meet the obligations and opportunities in industry. She should have "a liberal education before hospital training" and "a working knowledge of psychology and of civics, industrial, social and relief problems."

While holding a high standard of personal qualifications and professional training, Miss Wright makes clear the necessity for the nurse to remain plastic and ready to fulfill the developing variation of opportunities that industry holds for her. The fundamental principles on which the work should grow are stated. Special attention is given to the discussion of the relation of the nurse to the employer, the physician, fellow-workers and employees. Emphasis is laid on the great opportunity of the nurse as a teacher of American standards of living and hygiene. The first-aid room offers a favorable opportunity for much health teaching and for getting to know the employees. Many personal problems are by this channel brought to the nurse.

Many practical suggestions concerning the equipment and rearrangement of the first-aid room are given. Also the chapters on records and reports, the relation of the nurse and the employment office, and the lunch room are illustrated with forms and outlines that have been used with success.

Miss Wright presents the function of the industrial visiting nurse as a logical development of care of patients in the first-aid room. She discusses the relation of the industrial visiting nurse to the local organization where there is one, and also presents the very broad opportunity of the industrial nurse in the community that exists largely because of the industry. In such a town, the industrial nurse may develop a center from which visiting nursing service is extended into the homes. The nurse's home may become a community health center.

The chapters on the nurse's relation to the industrial physician and to the employment office and the chapters dealing with her more personal relations to the employees, both within the industry and in their own homes, bring out clearly the opportunity of the nurse in the great problem of human relations in industry.

Characteristic of the practical quality of the book is the appendix in which are found some important first-aid rules, a list of important sources of information on public health and social problems which are encountered by industrial nurses, and a classified bibliography. — *Ida M. Cannon.*

Human Vitality and Efficiency Under Prolonged Restricted Diet. By Francis G. Benedict, Walter R. Miles, Paul Roth, and H. Monmouth Smith. Pp. 701, with illustrations. Washington: The Carnegie Institution of Washington, 1919.

This is a voluminous report (701 pages) embodying the results of an investigation probably unequaled heretofore in scale and thoroughness. Many of the observations are of far more than academic interest. The work was undertaken in 1917 because of the enforced attention paid in wartime to restricted food supply, actual and prospective. How well such reduction of the ration could be borne by active adults was a matter of the utmost concern.

The subjects who volunteered for service in this trial were students at the International Young Men's Christian Association College, Springfield, Mass. Twenty-four were chosen; unavoidable substitutions brought the total to twenty-eight. Very considerable hardships were involved in carrying out the program and the investigators have paid a warm tribute to these young men for their fortitude and fidelity.

The procedure followed with Squad A (twelve subjects) may be indicated. It will not be necessary to speak in detail of the confirmatory management of Squad B. The first aim was to reduce the body weight of the subjects by approximately 10 per cent. Such a loss would result from fourteen days of complete fasting; it was actually secured by going on half-rations for six to eight weeks. The desired level being attained, the supply of food was made just sufficiently liberal to protect against further loss and the low figure was maintained for about two months. At the outset most of the men were slightly overweight by the accepted standards. All but four were decidedly underweight at the minimum. The allowances of food during the reduction period were valued at about 1500 Calories, rising to about 2000 Calories in the period of maintenance. Elaborate observations of metabolism, anthropometric data, physical and mental capacity were made throughout.

The outstanding fact is that a 10 per cent. reduction in weight was attended by a cut of about 40 per cent. in food consumption. This striking economy is referable to several conditions. First, the requirement for bare maintenance (basal metabolism) fell to an unexpected extent; that is, it became not only absolutely less but also much less when referred to kilogram of body weight or square meter of surface. Second, the "cost of digestion" was lowered in proportion to the intake of food. Third, muscular activity could be carried on at lower cost because of the reduced mass of tissue to be moved. Finally there

was, no doubt, a considerable curtailing of exercise, though this was not intended.

Without going into the details of the tests, it may be said that strength, endurance, and mental alertness did not suffer material impairment. Blood-pressure and heart-rate were considerably diminished. There was marked sensitiveness to cold. The chief drawbacks of the regimen were of a subjective character: galling hunger, depression of spirits, and a feeling of weakness which did not correctly indicate the actual resources. It may be noted that this indisposition to be active is a sound biological instinct as it favors the conservation of the limited stores of the organism. Men of less principle and resolution than these picked subjects might have been more seriously hampered in the performance of their daily work. Miles has called attention to a depression of sex-life among the members of the group which amounted almost to extinction.

These extended studies should serve to correct certain prevalent misconceptions. Chief of these is the belief that a man may greatly reduce his diet without changing his weight or his activities. Lusk has often protested against this notion. More confidently than ever, we can now say that the man who is over-weight is the man who overeats. One who is not above the standard weight cannot be charged with eating too much. The impressive demonstration is that a moderate sacrifice of weight can effect so large a saving. Under the stress of war, great populations have doubtless undergone this process. We recognize at once the possibility and the serious discomfort entailed.

On the theoretical side, the authors feel that the most interesting question raised is the cause of the lowered basal metabolism. The reduction referred to square meter of body surface per day was from about 1700 Calories to about 1400. It is suggested that this fall was consequent upon the large loss of nitrogen which was a feature of the experiments. This amounted, on the average, to 175 grams for each man. With the removal of so much protein or closely related material it is thought that a chemical stimulus previously acting to accelerate the general metabolism was withdrawn. In the present study the diet reduction affected all types of food in about the same proportion. A special investigation of rations low in fuel value but relatively high in protein is recognized as desirable. — *Percy G. Stiles.*

Hygiene and Public Health. By George M. Price, M.D. Second Edition, thoroughly revised. Cloth. Pp. 256 and index. Philadelphia: Lea & Febiger, 1919.

This is a handbook in which an attempt has been made to give in condensed form a complete survey of the various fields included in modern hygiene and public health. As the author states, in a subject so vast and embracing so many correlated branches and sciences, the work of epitomization is especially difficult; but the book gives a well-balanced presentation of most of the essentials. The treatment of the material in the chapter on industrial hygiene is especially admirable; and the inclusion in the chapter on the prevention of infectious diseases of the recent report of the American Public Health Association Committee on Standard Regulations for the Control of Communicable Diseases brings this subject up to date. It seems, however, that the subject of vital statistics, one of the very important branches of public health science, has been given altogether too brief mention in this volume.

The chapter headings are: Introduction, Housing Hygiene, School Hygiene, Industrial Hygiene, Public Water Supply, Food Supply, Milk Supply, Disposal of Waste Matter, Public Nuisances, Prevention of Infectious Diseases, Federal Hygiene. — *Barnett Cohen.*

Pathological Physiology of Internal Diseases. By Albion Walter Hewlett, M.D., B.S., Professor of Internal Medicine and Director of Clinical Laboratory, University of Michigan. Pp. 686 with index and illustrations. New York: D. Appleton and Company, 1919.

The grading of physical efficiency depends, in the end, upon capacity to appreciate altered structure and altered physiology. Hewlett's book gives one the functional basis of disease and bridges the gap between anatomy, physiology, and biochemistry and clinical medicine. The industrial physician who retains and applies the facts of scientific medicine to his work will find foundation for thought and advance in this text, which is certainly the best example of applied physiology at present obtainable. It is a matter for regret that a book published in 1919 dates, in terms of the material presented, from 1916, but the arrangement and treatment of the subject make one ready to forgive a situation which has unquestionably been forced by the conditions of the last few years. — *C. K. Drinker.*

BOOKS RECEIVED

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

Syphilis: A Treatise on Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis, and Treatment. By Henry H. Hazen, A.B., M.D., Professor of Dermatology and Syphilology, Medical Department of Georgetown University; Professor of Dermatology and Syphilology, Medical Department of Howard University; Member of American Dermatological Association and National Association for Control of Syphilis; Visiting Dermatologist and Syphilologist to Georgetown University Hospital, Freedmen's Hospital, Washington Asylum Hospital, and Woman's Evening Clinic; Author of *Diseases of the Skin, Cancer of the Skin*, etc. Cloth. Pp. 647 with illustrations, bibliography and index. St. Louis: C. V. Mosby Company, 1919.

The Practitioner's Manual on Venereal Diseases. With Modern Methods of Diagnosis and Treatment. By A. C. Magian, M.D., Ancien élève de l'Hôpital St. Louis, Paris; Hon. Surgeon Manchester French Hospital; Hon. Surgeon Wood Street Clinic for Genito-Urinary Diseases. Cloth. Pp. 215 with illustrations and index. St. Louis: C. V. Mosby Company, 1919.

Anaphylaxis and Anti-Anaphylaxis and Their Experimental Foundations. By Dr. A. Besredka, Professor at the Pasteur Institute. With a preface by Dr. E. Roux, Member of the Institute, Director of the Pasteur Institute. English Edition by S. Roodhouse Gloyne, M.D., D.P.H., Pathologist, City of London Hospital for Diseases of the Chest, Victoria Park. Cloth. Pp. 143 with index. St. Louis: C. V. Mosby Company, 1919.

SUBJECT INDEX TO VOLUME I

This is a subject index to all the reading matter in the JOURNAL OF INDUSTRIAL HYGIENE and one should, therefore, look for the subject word, with the following exception: "Book Notices" are indexed under this title on page 603. The name of the author follows the subject entry in brackets.

For author index see page 605.

PAGE

AIR, dust content of, critical review of methods for study of (Smyth) 140
AMERICAN Medical Association, meeting of, preliminary program of meetings for the discussion of industrial medicine and surgery 108
Public Health Association, announcement of meeting of 260
Public Health Association, meeting of, preliminary program of industrial hygiene section 321
ANTHRAX, note on, in Kashmir (White) 541
AROMATIC series, poisoning by compounds of (Hamilton) 200
ARSENIURETTED HYDROGEN gas, report on organs in case of fatal poisoning by (Delépine) 356
toxemic anemia from, in submarines (Dudley) 215

BACK strain — accident or disease? (Osgood) 150
BENZOL poisoning, chronic (Legge) 539
BOOK NOTICES, *see* page 603.
BURNS, treatment of (Clark) 390

CLINIC, dental, from standpoint of industrial surgeon (Elliott) 575
industrial, in general hospitals (Edsall) 394

DENTAL clinic, *see* Clinic, dental.
DERMATOSES, industrial, notes upon an unreported cause of (White) 498
industrial, sources, types and control (Pusey) 385
DRUG addiction, relation of, to industry (Blair) 284
DUST collection, electrostatic method of, applied to sanitary analysis of air (Bill) 323
content of air, critical review of methods for study of (Smyth) 140
pathological and clinical manifestations following inhalation of (Landis) 117

FACTORY employees, medical inspection of (Austin) .. 103
inspection and inspectors (Price) 165
FATIGUE, industrial, a practical study in (Link) 233
prevention of, in manufacturing industries (Spaeth) 435
problem of (Spaeth) 22
unnecessary fatigue — a multi-billion enemy to America (Gilbreth and Gilbreth) 542
FLATFOOT and its prevention (Bradford) 348
FRACTURES, chip, of terminal phalanges (Hurley) 85

GARMENTS, protective, in war gas industry (Bradley) 255
GAS, arseniuretted hydrogen, *see* Arseniuretted Hydrogen gas.
masks, *see* Gas Masks.
war gas industry, protective garments in (Bradley) .. 255
GAS MASKS, army, use of, in industries (Fieldner and Fogler) 69

HEALTH activities, industrial and community, co-ordination of (Ford) 402
education in industry (Evans) 397
hazards and mortality statistics of soft coal mining in Illinois and Ohio (Hayhurst) 360
HEALTH hazards, industrial (Lauffer) 373
human, and the American engineer (Whipple) 75
HERNIA in industry (Lauffer) 177
HOME work (Duke) 452

ILLINOIS and Ohio, health hazards and mortality statistics of soft coal mining in (Hayhurst) 360
INDUSTRIAL and community health activities, co-ordination of (Ford) 402
clinics in general hospitals (Edsall) 394
dental clinic from standpoint of industrial surgeon (Elliott) 575
dermatoses, *see* Dermatoses, industrial.
diseases, problem of ascertaining actual rise in mortality caused by unhealthy trades (Reiley) 109
diseases, twenty years' experience of the notification of (Legge) 590
diseases under the mediaeval trade guilds (Legge) .. 475
fatigue, *see* Fatigue.
health hazards (Lauffer) 373
hygiene, applications of psychiatry to (Cobb) 343
hygiene, Charles Turner Thackrah, a pioneer in (Legge) 578
hygiene, public health nursing and (Beard) 194
medicine and surgery — a résumé of its development and scope (Mock) 1
medicine and surgery — a résumé of its development, scope and benefits, Part II (Mock) 251
nursing, *see* Nursing.
physicians and surgeons, announcement of conference of 260
physician, proper executive function of (Kennedy and Neustadt) 428
poisoning, *see* under specific poison.
surgeon, dental clinic from standpoint of (Elliott) .. 575
surgery, is war time surgery applicable to? (Moorhead) 158
water supplies, sanitation of (Fair) 457
INDUSTRY, health education in (Evans) 397
scope of physical examination in (Selby) 380
INFECTIOUS diseases, control of, in industrial communities (Zinsser) 501, 525
INFLUENZA in Eastern Group of Telephone Companies, Bell System, 1918 (Billings and Wynne) .. 484
mortality of bituminous coal miners from influenza-pneumonia, October to December, 1918 (Dublin) 483
organizing an industry to combat influenza (Turner) 448
INORGANIC poisons, other than lead, in American industries (Hamilton) 89
INTERNATIONAL Association of Industrial Accident Boards and Commissions, announcement of meeting of 260

JOURNAL OF INDUSTRIAL HYGIENE, statement of ownership, management, and circulation of 370

KASHMIR, note on anthrax in (White) 541

LEAD poisoning in American industry (Hamilton) 8
LECTURES by Dr. Thomas M. Legge, announcement of 322, 369

PAGE

Malingering, involving the problem of getting sick or injured employee back to work (Fisher) 408
Manganese poisoning, chronic, occurrence, course and prevention of (Edsall, Wilbur, and Drinker) 183
Medical inspection of factory employees (Austin) ... 103
Medicine, industrial, *see* Industrial medicine.
Mining, mortality of bituminous coal miners from influenza-pneumonia, October to December, 1918 (Dublin) 483
soft coal in Illinois and Ohio, health hazards and mortality statistics of (Hayhurst) 360
Mortality of bituminous coal miners from influenza-pneumonia, October to December, 1918 (Dublin) 483
caused by unhealthy trades, problem of ascertaining actual rise in (Reiley) 109
statistics and health hazards of soft coal mining in Illinois and Ohio (Hayhurst) 360

National Organization for Public Health Nursing, announcement of formation of industrial nursing section, and statement of qualifications for membership in national organization 474
Safety Council, meeting of, programs of health service section and of general health session 320
Safety Council, what it is and what it does 371
Nursing, problems in training of industrial nurses (Strong) 297
public health, and industrial hygiene (Beard) 194

Ohio and Illinois, mortality statistics and health hazards of soft coal mining in (Hayhurst) 360

Phalanges, chip fractures of (Hurley) 85
Physical examinations (Meredith) 556
examination in industry, scope of (Selby) 380
Pneumokoniosis in man and horse (White) 500
Psychiatry, applications of, to industrial hygiene (Cobb) 343

PAGE

Railroad employees, syphilis in (Stokes and Brehmer) 419

Safety Congress, announcement of eighth annual Safety Congress 260
Sex and venereal disease hygiene, lecture on (Vedder). 582
Skin diseases, *see* Dermatoses.
Submarine, toxemic anemia from arseniuretted hydrogen in (Dudley) 215
Surgery, industrial, *see* Industrial surgery.
Syphilis, *see also* under Venereal Disease
Syphilis, an inestimable factor in industrial inefficiency (Oliver) 246
in railroad employees (Stokes and Brehmer) 419

Teeth and the worker (Burnet) 546
Telephone operating, study of medical aspects of, with statistics of sickness disability reports (Richardson) 54
Textile industry, women in, in war time (Kelley) ... 261
Thackrah, Charles Turner, a pioneer in industrial hygiene (Legge) 578
Trinitrotoluene, blood examinations of workers in (Minot) 301
study of fifty workers in (Putnam and Herman) 238

Varicose veins, significance and treatment of (Homans) 567
Venereal Disease, *see also* under Syphilis.
Venereal Disease and sex hygiene, lecture on (Vedder) 582

Water supplies, industrial, sanitation of (Fair) 457
Women in the textile industry in war time (Kelley) ... 261
Work, home (Duke) 452
spirit of, under craft guilds of the Middle Ages (Legge) 550

BOOK NOTICES

PAGE

Accident prevention, education in (Payne) 418
Accident prevention, organization in (Ashe) 214
Agriculture, effects of the great war upon, in the United States and Great Britain (Hibbard) 164
Alcohol, effect of, on psycho-physiological functions (Miles) 106
Alexander, J.: Colloid Chemistry 68
Amar, J.: The Physiology of Industrial Organization and the Re-employment of the Disabled 259
Anaphylaxis and anti-anaphylaxis and their experimental foundations (Besredka) 599
Anderson, B. M., Jr.: Effects of the War on Money, Credit and Banking in France and in the United States 566
Andress, J. M.: Health Education in Rural Schools ... 417
Ashe, S. W.: Organization in Accident Prevention 214
Ayres, M., Williams, J. F., and Wood, T. D.: Healthful Schools, How to Build, Equip, and Maintain Them 164
Benedict, F. G., and others: Human Vitality and Efficiency under Prolonged Restricted Diet 597
Besredka, A.: Anaphylaxis and Anti-Anaphylaxis and Their Experimental Foundations 599
Best, M.: The Blind: Their Condition and the Work Being Done for Them in the United States 368
Blind, their condition and the work being done for them in the United States (Best) 368
Bogart, E. L.: Direct and Indirect Costs of the Great War 566
Camus, J., and others: Physical and Occupational Re-education of the Maimed 68
Capes, W. P., and Carpenter, J. D.: Municipal Housecleaning 214
Carver, T. N.: Government Control of the Liquor Business in Great Britain and the United States ... 369
Clark, N. M.: Common Sense in Labor Management 565
Cody, S.: Commercial Tests and How to Use Them .. 415
Cole, G. D. H.: Labour in the Commonwealth 524
Colloid chemistry (Alexander) 68
Commons, J. R.: Industrial Goodwill 107
Curtis, H. S.: Recreation for Teachers: or the Teacher's Leisure Time 416
Davis, M. M., and Warner, A. R.: Dispensaries, Their Management and Development 68
Delano, J. A.: American Red Cross Text-Book on Home Hygiene and Care of the Sick 107
Diet, prolonged restricted, human vitality and efficiency under (Benedict and others) 597
Disabled, redemption of (Harris) 319
Disabled, re-employment of, and the physiology of industrial organization (Amar) 259
Disabled soldier (McMurtrie) 106
Disease, visceral, symptoms of (Pottenger) 214
Diseases, internal, pathological physiology of (Hewlett) 598
Dispensaries, their management and development (Davis and Warner) 68
Edelmann, R.: Textbook of Meat Hygiene 522
Egbert, S.: A Manual of Hygiene and Sanitation 566
Employment psychology (Link) 564
Findlay, J. J., and others: The Young Wage-Earner and the Problem of His Education 564
Food, what we eat and what happens to it (Hawk) ... 163
France, helping France (Gaines) 369
Gaines, R.: Helping France 369
Gephart, W. F.: Effects of the War upon Insurance, with Special Reference to the Substitution of Insurance for Pensions 164
Geriatrics (Thewlis) 214
Hammond, M. B.: British Labor Conditions and Legislation during the War 566
Harris, G.: The Redemption of the Disabled 319
Harris, H. F.: Pellagra 522
Hawk, P. B.: What We Eat and What Happens to It 163

PAGE

Hazen, H. H.: Syphilis: A Treatise on Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis, and Treatment 599
Health education in rural schools (Andress) 417
Health officer (Overton and Denno) 319
Health, towards racial health (March) 522
Hewlett, A. W.: Pathological Physiology of Internal Diseases 598
Hibbard, B. H.: Effects of the Great War upon Agriculture in the United States and Great Britain 164
Howe, G. L.: How to Prevent Sickness 163
Hygiene and public health (Price) 598
Hygiene and sanitation, manual of (Egbert) 566
Hygiene, home, and care of the sick, American Red Cross text-book on (Delano) 107
Industrial goodwill (Commons) 107
Industrial medicine and surgery (Mock) 523
Industrial nursing: handbook for industrial and pupil nurses and for employers of labor (Wright) 597
Industrial organization, the physiology of, and re-employment of the disabled (Amar) 259
Industry, the creative impulse in (Marot) 68, 415
Infection carriers, human (Simon) 523
Insurance, effects of the war upon, with special reference to the substitution of insurance for pensions (Gephart) 164
Insurance, health, standards of (Rubinow) 107
Insurance, social (Rubinow) 107
Insurance, social (Woodbury) 107
Intelligence scale, Otis group, a point scale, with manual of directions (Otis) 474
Ioteyko, J.: The Science of Labour and Its Organization 259
Kellogg, P. V., and Gleason A.: British Labor and the War: Reconstructors for a New World 416
Labor, British, and the war, reconstructors for a new world (Kellogg and Gleason) 416
Labor conditions, British, and legislation during the war (Hammond) 566
Labor in the commonwealth (Cole) 524
Labor management, common sense in (Clark) 565
Labor, the science of, and its organization (Ioteyko) .. 259
Leverhulme: The Six-hour Day, and Other Industrial Questions 213
Link, H. C.: Employment Psychology 564
Liquor business, government control of, in Great Britain and the United States (Carver) 369
Magian, A. C.: The Practitioner's Manual on Venereal Diseases 599
March, N. H.: Towards Racial Health 522
Marot, H.: The Creative Impulse in Industry 68, 415
McMurtrie, D. C.: The Disabled Soldier 106
Meat hygiene, text-book of (Edelmann) 522
Medical Research Laboratory, manual of 107
Mental tests, army 107
Metcalf, W. B.: Tuberculosis of the Lymphatic System 107
Miles, W. R.: Effect of Alcohol on Psycho-Physiological Functions 106
Mock, H. E.: Industrial Medicine and Surgery 523
Municipal housecleaning (Capes and Carpenter) 214
Myers, C. S.: Present-Day Applications of Psychology 566
Odencrantz, L. C.: Italian Women in Industry 68
Otis, A. S.: Otis Group Intelligence Scale: A Point Scale, with Manual of Directions 474
Overton, F., and Denno, W. J.: The Health Officer .. 319
Payne, E. G.: Education in Accident Prevention 418
Pellagra (Harris) 522
Pottenger, F. M.: Symptoms of Visceral Disease 214
Price, G. M.: Hygiene and Public Health 598
Psychology, present-day applications of (Myers) 566
Re-education, physical and occupational, of the maimed (Camus and others) 68
Rubinow, I. M.: Social Insurance 107
Rubinow, I. M.: Standards of Health Insurance 107

PAGE

Schools, healthful, how to build, equip, and maintain them (Ayres, Williams, and Wood) 164
Shop committee, a handbook for employer and employee (Stoddard) 368
Sickness, how to prevent (Howe) 163
Simon, C. E.: Human Infection Carriers 523
Six-hour day, and other industrial questions (Leverhulme) 213
Stoddard, W. L.: The Shop Committee, a Handbook for Employer and Employee 368
Syphilis, etiology, pathology, diagnosis, prognosis, prophylaxis, and treatment of (Hazen) 599
Teachers, recreation for, or the teacher's leisure time (Curtis) 416
Tests, commercial, and how to use them (Cody) 415
Thewlis, M. W.: Geriatrics 214
Towns, new towns after the war 369
Tuberculosis of the lymphatic system (Metcalf) 107
Venereal diseases, the practitioner's manual on (Magian) 599
Vital statistics, an introduction to the science of demography (Whipple) 163
Wage-earner, young, and the problem of his education (Findlay and others) 564
War, direct and indirect costs of (Bogart) 566
War, effects of, on money, credit and banking in France and in the United States (Anderson) 566
Whipple, G. C.: Vital Statistics: An Introduction to the Science of Demography 163
Women, Italian, in industry (Odencrantz) 68
Woodbury, R. M: Social Insurance 107
Wright, F. S.: Industrial Nursing: A Handbook for Industrial and Pupil Nurses and for Employers of Labor 597

AUTHOR INDEX TO VOLUME I

PAGE

Austin, Maynard A.: Medical Inspection of Factory Employees 103

Beard, Mary: Public Health Nursing and Industrial Hygiene 194
Bill, J. Penteado: The Electrostatic Method of Dust Collection as Applied to the Sanitary Analysis of Air 323
Billings, John S., and Wynne, S. W.: Influenza in the Eastern Group of Telephone Companies, Bell System, 1918 484
Blair, Thomas S.: The Relation of Drug Addiction to Industry 284
Bradford, Edward H.: Flatfoot and its Prevention .. 348
Bradley, H. C.: Protective Garments in the War Gas Industry 255
Brehmer, Helen E.: *See* Stokes, John H.
Burnet, James: Teeth and the Worker 546

Clark, W. Irving, Jr.: The Treatment of Burns 390
Cobb, Stanley: Applications of Psychiatry to Industrial Hygiene 343

Delépine, Sheridan: Report on Certain Organs in a Case of Fatal Poisoning by Arseniuretted Hydrogen Gas 356
Drinker, Cecil K.: *See* Edsall, David L.
Dublin, Louis I.: The Mortality of Bituminous Coal Miners from Influenza-Pneumonia, October to December, 1918 483
Dudley, Sheldon F.: Toxemic Anemia from Arseniuretted Hydrogen Gas in Submarines 215
Duke, Emma: Home Work 452

Edsall, David L.: Industrial Clinics in General Hospitals 394
Edsall, David L., Wilbur, F. P., and Drinker, Cecil K.: The Occurrence, Course and Prevention of Chronic Manganese Poisoning 183
Elliott, Ralph W.: The Industrial Dental Clinic from the Standpoint of the Industrial Surgeon 575
Evans, W. A.: Health Education in Industry 397

Fair, Gordon M.: The Sanitation of Industrial Water Supplies 457
Fieldner, A. C., and Fogler, B. B.: Use of Army Gas Masks in Industries 69
Fisher, Judson C.: Malingering — Involving the Problem of Getting the Sick or Injured Employee Back to Work 408
Fogler, B. B.: *See* Fieldner, A. C.
Ford, C. E.: The Co-ordination of Industrial and Community Health Activities 402

Gilbreth, Frank B., and Gilbreth, Lillian M.: Unnecessary Fatigue — A Multi-Billion Enemy to America 542
Gilbreth, Lillian M.: *See* Gilbreth, Frank B.

Hamilton, Alice: Lead Poisoning in American Industry 8
Hamilton, Alice: Inorganic Poisons, Other than Lead, in American Industries 89
Hamilton, Alice: Industrial Poisoning by Compounds of the Aromatic Series 200
Hayhurst, Emery R.: The Health Hazards and Mortality Statistics of Soft Coal Mining in Illinois and Ohio 360
Herman, William: *See* Putnam, Tracy Jackson.
Homans, John: The Significance and Treatment of Varicose Veins 567
Hurley, William R.: Chip Fractures of Terminal Phalanges 85

Kelley, Florence: Wage-Earning Women in War Time: The Textile Industry 261
Kennedy, Dudley R., and Neustadt, Richard M.: The Proper Executive Function of the Industrial Physician 428

Landis, H. R. M.: The Pathological and Clinical Manifestations Following the Inhalation of Dust ... 117
Lauffer, Charles A.: Hernia in Industry 177
Lauffer, Charles A.: Industrial Health Hazards 373
Legge, Thomas M.: Industrial Diseases under the Mediaeval Trade Guilds 475
Legge, Thomas M.: Chronic Benzol Poisoning 539
Legge, Thomas M.: The Spirit of Work under the Craft Guilds of the Middle Ages 550
Legge, Thomas M.: Charles Turner Thackrah: A Pioneer in Industrial Hygiene 578
Legge, Thomas M.: Twenty Years' Experience of the Notification of Industrial Diseases 590
Link, Henry C.: A Practical Study in Industrial Fatigue 233

Meredith, Florence L.: Physical Examinations 556
Minot, George R.: Blood Examinations of Trinitrotoluene Workers 301
Mock, Harry E.: Industrial Medicine and Surgery — A Résumé of Its Development and Scope 1
Mock, Harry E.: Industrial Medicine and Surgery — A Résumé of Its Development, Scope and Benefits. Part II 251
Moorhead, John J.: Is War Time Surgery Applicable to Industrial Surgery? 158

Neustadt, Richard M.: *See* Kennedy, Dudley R.

Oliver, Edward A.: Syphilis, an Inestimable Factor in Industrial Inefficiency 246
Osgood, Robert B.: Back Strain — An Accident or a Disease? 150

Price, George M.: Factory Inspection and Factory Inspectors 165
Pusey, William Allen: Industrial Dermatoses, Their Sources, Types and Control 385
Putnam, Tracy Jackson, and Herman, William: A Study of Fifty Workers in Trinitrotoluene 238

Reiley, Austin D.: The Problem of Ascertaining the Actual Rise in Mortality Caused by Unhealthy Trades 109
Richardson, Anna G.: Telephone Operating: A Study of Its Medical Aspects with Statistics of Sickness Disability Reports 54

PAGE

Selby, C. D.: Scope of the Physical Examination in Industry 380
Smyth, Henry F.: A Critical Review of Methods for the Study of Dust Content of Air 140
Spaeth, Reynold A.: The Problem of Fatigue 22
Spaeth, Reynold A.: The Prevention of Fatigue in Manufacturing Industries 435
Stokes, John H., and Brehmer, Helen E.: Syphilis in Railroad Employees 419
Strong, Anne H.: Problems in the Training of Industrial Nurses 297

Turner, C. E.: Organizing an Industry to Combat Influenza 448

PAGE

Vedder, Edward B.: A Lecture on Sex and Venereal Disease Hygiene 582

Whipple, George C.: Human Health and the American Engineer 75
White, R. Prosser: Notes upon an Unreported Cause of Occupational Dermatosis 498
White, R. Prosser: Pneumokoniosis in Man and Horse 500
White, R. Prosser: Note on Anthrax in Kashmir 541
Wilbur, F. P.: *See* Edsall, David L.
Wynne, S. W.: *See* Billings, John S.

Zinsser, Hans: The Control of Infectious Diseases in Industrial Communities 501, 525

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CONTENTS

I. List of Periodicals 1

II. List of Abstractors and Reviewers 5

III. Subject Headings for Abstracts 5

IV. Abstracts of Current Literature 6

V. Index of Abstracts of Current Literature 19

LIST OF PERIODICALS

Each of the following periodicals will be examined systematically for material pertinent to the subject of industrial hygiene. In the main, abstracts of American periodicals will begin with the January, 1919, issues; abstracts of foreign periodicals will begin with the latest issues current in the United States in January, 1919. No periodicals are included in the list which are not at the present time being received regularly in the United States. A number of foreign periodicals will gradually be added to the list as their publication abroad is resumed and as they begin to reach the United States.

Articles of interest appearing in publications other than those on the following list will frequently be abstracted. In such cases the title of the publications in which the articles in question appear will be written out in full. Articles, especially technical papers, which can not be satisfactorily abstracted in brief space, will frequently be listed by title only. Papers which, in the opinion of the editors, have no merit will not be included in the abstracts.

TITLE OF PERIODICAL	ABBREVIATION
American Architect, The	Am. Arch.
American City, The	Am. City
American Economic Review, The	Am. Econ. Rev.
American Industries	Am. Industries
American Journal of Care for Cripples	Am. Jour. Care Cripples
American Journal of Insanity, The	Am. Jour. Insan.
American Journal of Nursing, The	Am. Jour. Nursing
American Journal of Ophthalmology	Am. Jour. Ophth.
American Journal of Physiology, The	Am. Jour. Physiol.
American Journal of Public Health	Am. Jour. Pub. Health
American Journal of Roentgenology, The	Am. Jour. Roentgenol.

TITLE OF PERIODICAL	ABBREVIATION
American Journal of Science, The	Am. Jour. Sc.
American Journal of Sociology, The	Am. Jour. Sociol.
American Journal of the Medical Sciences, The	Am. Jour. Med. Sc.
American Labor Legislation Review, The	Am. Labor Legis. Rev.
American Political Science Review, The	Am. Pol. Sc. Rev.
American Review of Tuberculosis, The	Am. Rev. Tuberc.
Annales de dermatologie et de syphiligraphie	Ann. de dermat. et de syph.
Annales d'hygiène publique et de médecine légale	Ann. d'hyg. pub.
Annales de l'Institut Pasteur	Ann. de l'Inst. Pasteur
Annales de médecine	Ann. de méd.
Annali d'igiene	Ann. d'ig.
Annali di medicina navale e coloniale	Ann. di med. nav. e col.
Annals of Otology, Rhinology and Laryngology	Ann. Otol., Rhinol. and Laryngol.
Annals of Surgery	Ann. Surg.
Annals of the American Academy of Political and Social Science	Ann. Am. Acad. Pol. Sc.
Architecture and Building	Arch. and Bldg.
Archiv für die gesamte Physiologie des Menschen und des Thiere (Pflüger's)	Arch. f. d. ges. Physiol.
Archiv für experimentelle Pathologie und Pharmakologie	Arch. f. exper. Path. u. Pharmakol.
Archiv für Hygiene	Arch. f. Hyg.
Archiv für Ophthalmologie	Arch. Ophth.
Archives de médecine et de pharmacie militaires	Arch. de méd. et de pharm. mil.
Archives de médecine expérimentale et d'anatomie pathologique	Arch. de méd. expér. et d'anat. path.
Archives d'Ophtalmologie	Arch. d'opht.
Archives des maladies du coeur, des vaisseaux et du sang	Arch. d. mal. du coeur
Archives of Internal Medicine, The	Arch. Int. Med.
Archives of Ophthalmology	Arch. Ophth.
Archives of Radiology and Electrotherapy	Arch. Radiol. and Elec.
Berliner klinische Wochenschrift	Berl. klin. Wchnschr.
Biochemische Zeitschrift	Biochem. Ztschr.
Boston Medical and Surgical Journal, The	Boston Med. and Surg. Jour.
Brain: A Journal of Neurology	Brain
British Journal of Dermatology and Syphilis, The	Brit. Jour. Dermat. and Syph.
British Journal of Nursing, The	Brit. Jour. Nursing.
British Journal of Ophthalmology	Brit. Jour. Ophth.
British Journal of Surgery, The	Brit. Jour. Surg.
British Medical Journal, The	Brit. Med. Jour.
Bulletin de l'Academie de médecine	Bull. de l'Acad. de méd.
Bulletin of the Johns Hopkins Hospital	Bull. Johns Hopkins Hosp.
Bulletin of the New York State Industrial Commission, The	Bull. N. Y. State Ind. Com.
Bullettino delle scienze mediche	Bull. d. sc. med.
Canadian Engineer, The	Canad. Engineer
Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten	Centralbl. f. Bakteriol.
Chemical Abstracts	Chem. Abstr.
Chemische Zentralblatt	Chem. Zentralbl.
Child Labor Bulletin, The	Child Labor Bull.
Chirurgia degli organi di movimento, La	Chir. d. org. di movimento
Correspondenz-Blatt für schweizer Aerzte	Cor-Bl. f. schweiz. Aerzte
Dermatologische Wochenschrift	Dermat. Wchnschr.
Dermatologische Zeitschrift	Dermat. Ztschr.
Deutsches Archiv. für klinische Medizin	Deutsch. Arch. f. klin. Med.
Deutsche medizinische Wochenschrift	Deutsch. med. Wchnschr.
Domestic Engineering	Dom. Engin.
Economic Geology	Econ. Geol.
Economic Journal, The	Econ. Jour.
Engineer, The	Engineer
Engineering	Engin.
Engineering News-Record	Engin. N.-Rec.
Factory	Factory
Fortschritte auf dem Gebiete der Röntgenstrahlen	Fortschr. a. d. Geb. d. Röntgenstrahlen
Great Britain—Annual Report of the Chief Inspector of Factories and Workshops	Great Britain Ann. Rep. Chief Inspect. Factories and Workshops
Heart	Heart
Heating and Ventilating Magazine, The	Heat. and Ven.
Hygienische Rundschau	Hyg. Rundschau
Igiene moderna	Ig. mod
Index Medicus: Sections on Construction and Management of Hospitals; Hygiene of Habitations; Hygiene and Diseases of Occupations; Hygiene of Person; Toxicology; Poisonous and Asphyxiating Gases; Reconstruction, Re-education, Rehabilitation	

TITLE OF PERIODICAL	ABBREVIATION
Industrial Management	Ind. Management
Journal de physiologie et de pathologie générale	Jour. de physiol. et de path. gén.
Journal of Bacteriology	Jour. Bacteriol.
Journal of Biological Chemistry, The	Jour. Biol. Chem.
Journal of Cancer Research, The	Jour. Cancer Research
Journal of Cutaneous Diseases, Including Syphilis, The	Jour. Cutan. Dis.
Journal of Experimental Medicine, The	Jour. Exper. Med.
Journal of Hygiene, The	Jour. Hyg.
Journal of Industrial and Engineering Chemistry, The	Jour. Indust. and Engin. Chem.
Journal of Infectious Diseases, The	Jour. Infect. Dis.
Journal of Laboratory and Clinical Medicine, The	Jour. Lab. and Clin. Med.
Journal of Laryngology, Rhinology and Otology, The	Jour. Laryngol., Rhinol. and Otol.
Journal of Medical Research, The	Jour. Med. Research
Journal of Nervous and Mental Disease	Jour. Nerv. and Ment. Dis.
Journal of Orthopedic Surgery, The	Jour. Orthop. Surg.
Journal of Parasitology, The	Jour. Parasitol.
Journal of Pathology and Bacteriology, The	Jour. Path. and Bacteriol.
Journal of Pharmacology and Experimental Therapeutics, The	Jour. Pharmacol. and Exper. Therap.
Journal of Physiology, The	Jour. Physiol.
Journal of Political Economy, The	Jour. Pol. Econ.
Journal of Sociologic Medicine, The	Jour. Sociol. Med.
Journal of State Medicine, The	Jour. State Med.
Journal of Tropical Medicine and Hygiene, The	Jour. Trop. Med.
Journal of the American Chemical Society	Jour. Am. Chem. Soc.
Journal of the American Medical Association, The	Jour. Am. Med. Assn.
Journal of the American Waterworks Association	Jour. Am. Waterworks Assn.
Journal of the Boston Society of Civil Engineers	Jour. Boston Soc. Civ. Eng.
Journal of the Franklin Institute	Jour. Franklin Inst.
Journal of the Institute of Actuaries	Jour. Inst. Actuaries
Journal of the New England Waterworks Association	Jour. New Eng. Waterworks Assn.
Journal of the Roentgen Society, The	Jour. Roentg. Soc.
Journal of the Royal Army Medical Corps	Jour. Roy. Army Med. Corps
Journal of the Royal Naval Medical Service	Jour. Roy. Nav. Med. Serv.
Journal of the Royal Sanitary Institute	Jour. Roy. San. Inst.
Journal of the Society of Chemical Industry	Jour. Soc. Chem. Indust.
Kolloid-Zeitschrift	Kolloid-Ztschr.
Labour Gazette, The	Labour Gaz.
Lancet, The	Lancet
Machinery	Machinery
Mechanical Engineering	Mech. Engin.
Medical Officer, The	Med. Officer
Medical Record	Med. Rec.
Mémoires et compte rendu des travaux de la Société des ingénieurs civils de France	Mém. et comp. rend. d. trav. Soc. ingén. civ. de France
Mental Hygiene	Ment. Hyg.
Metal Worker, Plumber and Steam Fitter	Metal Worker, etc.
Military Surgeon, The	Mil. Surgeon
Mining Magazine, The	Mining Mag.
Mining and Scientific Press	Mining and Sc. Press
Modern Hospital, The	Mod. Hosp.
Monatsschrift für Psychiatrie und Neurologie	Monatsschr. f. Psychiat. u. Neurol.
Monographs of the Rockefeller Institute for Medical Research	Monogr. Rockefeller Inst. Med. Research
Münchener medizinische Wochenschrift	München. med. Wchnschr.
Municipal and County Engineering	Munic. Eng.
Municipal Engineers Journal, The	Munic. Eng. Jour.
Municipal Journal	Munic. Jour.
National Industrial Conference Board Publications	Nat. Ind. Conference Board Pub.
National Municipal Review	Nat. Munic. Rev.
Nederlandsch Tijdschrift voor Geneeskunde	Nederl. Tijdschr. v. Geneesk.
New York City—Publications of Bureau of Public Health Education	
New York Medical Journal	New York Med. Jour.
Office international d'hygiène publique	Office internat. d'hyg. pub.
Pacific Coast Journal of Nursing, The	Pacific Coast Jour. Nursing
Paris médical	Paris méd.
Pharmaceutical Journals—American and Foreign. (This heading includes all periodicals reviewed for the Digest of Comments on the Pharmacopœia of the United States of America and on the National Formulary. The names of these periodicals when they appear will be written in full.)	

TITLE OF PERIODICAL	ABBREVIATION
Physiological Abstracts	Physiol. Abstr.
Policlinico, Il	Policlinico
Political Science Quarterly	Pol. Sc. Quart.
Power	Power
Presse médicale	Presse méd.
Proceedings of the American Society of Civil Engineers	Proc. Am. Soc. Civ. Eng.
Proceedings of the Royal Society of Medicine	Proc. Roy. Soc. Med.
Procès verbaux de chaque séance de la Société des ingénieurs civils de France	Proc. verb. d. chaque séance de Soc. ingen. civ. de France
Progrès médicale, Le	Progrès med.
Public Health	Pub. Health
Public Health Journal, The	Pub. Health Jour.
Public Health Nurse, The	Pub. Health Nurse
Quarterly Journal of Economics, The	Quart. Jour. Econ.
Quarterly Journal of Experimental Physiology	Quart. Jour. Exper. Physiol.
Quarterly Journal of Medicine, The	Quart. Jour. Med.
Quarterly Publications of the American Statistical Association	Quart. Pub. Am. Statis. Assn.
Revue de chirurgie	Rev. de chir.
Revue d'hygiène et de police sanitaire	Rev. d'hyg.
Revue de médecine	Rev. de méd.
Revue générale d'ophtalmologie	Rev. gen. d'opht.
Riforma medica, La	Riforma med.
Rivista di ingegneria sanitaria	Riv. di ingegner. san.
Safety	Safety
Safety Engineering	Safety Engin.
Science	Science
Social Hygiene	Soc. Hyg.
State Boards of Health: Reports, Bulletins, Irregular Publications.	
State Boards of Labor and Industries: Reports, Bulletins, Irregular Publications.	
Surgery, Gynecology, and Obstetrics with International Abstract of Surgery	Surg., Gynec. and Obst.
Survey, The	Survey
System	System
Therapeutische Monatshefte	Therap. Monatsh.
Therapie der Gegenwart, Die	Therap. d. Gegenw.
Transactions of the American Society of Municipal Improvements	Tr. Am. Soc. Munic. Improv.
Transactions of the Canadian Society of Civil Engineers	Tr. Canad. Soc. Civ. Eng.
Transactions of the Medico-Legal Society of London	Tr. Med.-Leg. Soc., Lond.
United States Bureau of Labor Statistics, Monthly Labor Review	U. S. Bur. Labor Statis., Month. Labor Rev.
United States Bureau of Mines, Bulletins, Circulars, and Technical Papers	U. S. Bur. Mines, Bull., Circ., Tech. Papers
United States Department of Labor, Bulletins and Annual Reports	U. S. Dept. Labor, Bull., Ann. Rep.
United States Naval Medical Bulletin	U. S. Nav. Med. Bull.
United States Public Health Service, Hygienic Laboratory Bulletins	U. S. Pub. Health Ser., Hyg. Lab. Bull.
United States Public Health Service, Public Health Bulletins	U. S. Pub. Health Ser., Pub. Health Bull.
United States Public Health Service, Public Health Reports	U. S. Pub. Health Ser., Pub. Health Rep.
Vierteljahrsschrift für gerichtliche Medizin und öffentliche Sanitätswesen	Vrtljschr. f. gerichtl. Med.
Virchow's Archiv für pathologische Anatomie und Physiologie und für klinische Medizin	Virchows Arch. f. path. Anat.
Wiener klinische Wochenschrift	Wien. klin. Wchnschr.
Zeitschrift für experimentelle Pathologie und Therapie	Ztschr. f. exper. Path. u. Therap.
Zeitschrift für Hygiene und Infektionskrankheiten	Ztschr. f. Hyg. u. Infektionskrankh.
Zeitschrift für klinische Medizin	Ztschr. f. klin. Med.
Zeitschrift für orthopädische Chirurgie	Ztschr. f. orthop. Chir.
Zeitschrift für physiologische Chemie (Hoppe-Seyler's)	Ztschr. f. physiol. Chem.
Zentralblatt für innere Medizin	Zentralbl. f. inn. Med.

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SUBJECT HEADINGS FOR ABSTRACTS

Material abstracted for THE JOURNAL OF INDUSTRIAL HYGIENE will be classified under the following subject headings:

1. General.
2. Systemic Occupational Diseases: Occurrence, Treatment, and Prevention. Central Nervous System, Blood, Circulation, Lungs, Kidneys, Alimentary Tract.
3. Poisonous Hazards and Their Effects: Gases, Chemicals, etc.
4. Dust Hazards and Their Effects.
5. Occupational Infectious Diseases: Occurrence, Treatment and Prevention.
6. Occupational Affections of the Skin and Special Senses.
7. Industrial Accidents: Injuries, Burns, etc.: Occurrence, Treatment and Prevention.
8. Fatigue and Occupational Neuroses.
9. Nutrition.
10. Hazards of Compressed Air, Diminished Pressure, Generation and Use of Electricity, and Electrical Welding.
11. Heat, Cold and Humidity.
12. Women in Industry.
13. Industrial Sanitation: Illumination, Ventilation, Heating, Water Supply, Sewage Disposal.
14. Medical Dispensaries and Hospitals in Industrial Plants.
15. Industrial Nursing.
16. Industrial Personal and Community Hygiene: Housing, etc.
17. Industrial Investigations and Surveys.
18. Industrial Management in Its Health Relations: Special Tests in the Selection of Employees.
19. Industrial Service and Mutual Benefit Associations.
20. Industrial Health Legislation and Court Decisions: Malingering.
21. Workmen's Compensation and Insurance.
22. Safety Devices.
23. Rehabilitation of Disabled Employees.
24. Industrial Mortality and Morbidity Statistics.
25. Miscellaneous.

ABSTRACTS *of* CURRENT LITERATURE
OF
INDUSTRIAL HYGIENE

GENERAL

PROGRESS IN INDUSTRIAL HYGIENE AND MEDICINE DURING THE YEAR 1918. *F. D. Patterson.* Mod. Hosp., Jan., 1919, 12, No. 1, 31-32.—A brief summary of the progress of industrial medicine and hygiene in seven distinct fields.—Harold A. Bulger.

INDUSTRY AND MEDICINE. *S. D. Hubbard.* Boston Med. and Surg. Jour., Jan. 30, 1919, 180, No. 5, 119-122.—This article is a discourse, calling the attention of the profession to the importance of industrial diseases and conditions. The author considers that the war has severely tested this new field of medical activity and has proved that whole-time medical service in certain factories and establishments is a necessity.—George R. Minot.

HEALTH PROBLEMS OF INDUSTRIAL WORKERS. *J. A. Lapp.* Ann. Am. Acad. Pol. Sc., Jan., 1919, 81, Whole No. 170, 130-136.—The exigencies of the war situation have established new standards for evaluating workers. Rather than eliminate workmen who have been trained at expense to industry and the community, we should make further advances along the lines of protection and of rehabilitation.

One of the most obvious lessons learned from the war, both in this country and in England, has been that a relatively short working day is frequently economical from the standpoint of the individual, the industry, and the community. The War Labor Board has used its influence constantly in the establishment of the eight-hour day. Besides reducing production from day to day, the fatigue of excessive hours undermines the health of the worker, increases lost time due to illness, leads to an inferior quality of production, and is a serious source of accidents.

Not only must the worker be safeguarded in his employment, but proper housing facilities must be provided to protect him from unsanitary conditions. The ultimate solution of the question of housing rests upon coöperative control. As long as society permits unsanitary houses to exist, some workers will be found who, by choice or necessity, will live in these houses.

Among the more serious menaces to the workers' health in industry are dust, poisons, devitalized air, heat, humidity, and exposure. These hazards vary according to the type of men subjected to them. Where they cannot be eliminated, every effort should be made by the employment department to select men who are constitutionally fitted to combat the dangers to which they are exposed. Not only should men be protected in this way, but where they have succumbed through accident or loss of health, provision should be made for returning them to safe and profitable employment as soon as their physical condition permits.

Since women have taken a permanent place in industry, special scientific inquiries have been undertaken regarding their needs. Among these are: (1) special effects of industrial poisons; (2) the peculiar effect of bad posture; (3) effects of fatigue upon women not found in the case of men; (4) unusual hazards of heat, dust, humidity, devitalized air, and weather exposure.

What has been said of selection in employment of men and women is even more obviously true in the case of children. Since the prohibition of child labor has become almost universal in this country, we are ready to take a second step. Vocational guidance should not only take into account the individual's aptitude for certain kinds of work, but also his physical ability to pursue this work over a long period of time without the serious depletion of his physical resources.—Charles H. Paull.

RECONSTRUCTION OF THE FACTORY MEDICAL SERVICE. Brit. Med. Jour., Jan. 25, 1919, No. 3030, 109.—The Incorporated Association of Certifying Surgeons has issued a report on the Reconstruction of the Factory Medical Service, suggesting points in which the efficiency of that service may be increased. The two points of the system have been individual medical examination and practical knowledge of the conditions of employment. In the past there has been an impairment of the usefulness of the service because the examinations of young people have not been followed up with a view to securing practical results. The report recommends the formation of a well equipped medical department to carry on the executive and administrative work. This should be in charge of a single officer with other medical inspectors, and together with the entire factory department should be under the Ministry of Labor. It further recommends that the Labor Exchanges be made into adjuncts to medical examination by securing employment suited to the physical condition of young persons. In order to secure this it is suggested that the heads of schools secure from the parents of children the type of labor desired and that the Director of Education forward to the Director of the Exchange particulars respect-

ing the school medical history, the educational standard and the date of birth. An employment ticket would then be issued giving name of firm, nature of employment, any fresh physical defects and conditions attached to certificate of fitness. The certifying surgeon would fill this out and file it with the Labor Exchange. This would be done with each change of employment. Inspectors for each exchange would visit factories and see that conditions were carried out. Other provisions deal with the extension of national insurance to young persons of 14 and 15; greater efficiency in dealing with industrial diseases and poisoning and the granting of certificates under the Workman's Compensation Act.—William E. Brown.

THE ENGINEERING OF MAN POWER. Mech. Engin., Jan., 1919, 41, No. 1, 27.—Keynote sessions of the Annual Meeting of the American Society of Mechanical Engineers. Papers and addresses of vital interest.—Gordon M. Fair.

SYSTEMIC OCCUPATIONAL DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

CENTRAL NERVOUS SYSTEM

ELIMINATING THE EPILEPTIC FROM THE NAVY. *L. E. Bisch.* U. S. Nav. Med. Bull., Jan., 1919, 13, No. 1, 5-16.—Minor points in history and examination that are suggestive of epilepsy are listed, as well as the results of following up these points, and a table of symptoms and signs of epilepsy in the cases seen by the author.—Charles C. Lund.

CIRCULATION

CARDIOVASCULAR EXAMINATIONS OF FIFTY-FIVE THOUSAND RECRUITS. *G. E. Fahr et al.* Jour. Am. Med. Assn., Jan. 18, 1919, 72, No. 3, 162-169.—The importance of cardiovascular disease is vividly emphasized in the opening paragraph of Fahr's report. He cites the facts recently brought out in England that out of 350,000 men in the British army, discharged and pensioned for wounds and diseases, a little over 10 per cent. were for heart disease and about 11 per cent. for chest complaints and tuberculosis. Since many men have been put in deferred classes in the army on account of heart disease, it is undoubtedly a more serious cause of disability than tuberculosis. There have been two and one-half times as many pensions for heart disease in the British army as there have been for loss of limbs, and nearly twice as many as for nervous diseases, shell shock and epilepsy together.

Findings

All cases had passed through local boards before subjection to these examinations.

1. The incidence of aortic insufficiency in Texas and Oklahoma is about 0.1 per cent. for men between 21 and 31. Most of these cases were due to polyarthritis, and since experience has always shown that aortic lesions offer a bad outlook if hard physical work is to be done, these were excluded.

2. Uncomplicated mitral insufficiency of endocarditic origin is comparatively rare, being probably not much greater than 0.1 per cent. for men between 21 and 31.

3. Accidental murmurs at the apex are very common, about 3 per cent. of all men showing them, and they are of practically no significance unless accompanied by signs of hypertrophy and increased pulmonic pressure. The greater part of these accidental murmurs were systolic. Two and one-half per cent. were loudest at the apex; 0.6 per cent. over the second left intercostal space. The fact that these accidental and harmless murmurs are frequently rough in character is emphasized.

4. Mitral stenosis, idiopathic hypertrophy and other conditions, such as heart block, were very rare.

5. Neurocirculatory asthenia (irritable heart) is the most important cardiovascular disease in our army. At least 0.5 per cent. of all drafted men should be rejected for this condition before the various divisions sail for France.

Rapid heart draws the attention of the examiner of these men. This is either induced by very moderate exercise or occurs before exercise as a result of the imminence of the examination.

Pulse rates are taken first standing, then recumbent. The recruit then hops 100 times on one foot, and pulse rates are taken at once and two minutes later, in both instances with the man recumbent. Normal men mind such a test very little, their pulse rate returning to within a few beats of normal in two minutes. The circulatory asthenic does not do so and often shows dyspnœa, cyanosis and a general poor "come back" which lasts some time.—Cecil K. Drinker.

EFFECT OF CARDIAC DISTRESS ON THE WORK OF RECRUITS. *G. E. Hein.* Jour. Am. Med. Assn., Jan. 25, 1919, 72, No. 4, 249-252.—Hein brings out the fact that the patients giving trouble in examination are not those with organic valvular defects, but they are the men complaining of some dyspnœa or cardiac pain, showing a rapid pulse, a poor response to exercise, often blue, cyanotic hands and feet, profuse sweating, especially in the axillæ, a coarse, irregular tremor and apparently little change in the heart. If such men are accepted as a result of first examination they usually find their way back to cardiac examiners before many weeks. Hein has examined 300 such men who were returned as unable to perform full military duty. Of this number fifty-one were found to have definite physical defects, as hypertension and hypertrophy, etc. The remaining 239 belonged to a large group showing persistent tachycardia. In this group the number of alcohol and tobacco users was high. Eighty-six of these showed thyroid enlargement. Previous sedentary occupations seemed to have nothing to do with the development of symptoms. The total number of cases showing concomitant cardiac and neuro-psychiatric symptoms is not given, but is referred to as considerable.—Cecil K. Drinker.

CARDIOVASCULAR EXAMINATIONS OF RECRUITS AT CAMP LEWIS MUSTERING OFFICE, APRIL 20 TO OCTOBER 1, 1918. *D. Cass.* Jour. Am. Med. Assn., Jan. 25, 1919, 72, No. 4, 248-249.—Examinations

are recorded for 30,697 men carried out by boards of medical officers in two groups known as preliminary and refer examiners.

The preliminary examinations are of most interest industrially. Recruits in groups of forty were placed in charge of five examiners. Each officer examined eight men, noting the location and character of the apex impulse and auscultating at all four valvular areas. The men were then exercised, bending forward and touching the floor forty times, keeping the knees stiff. This exercise was fairly severe and noiseless and usually caused men with real cardiac defect to drop out without being subjected to serious drill. In all cases in which an abnormally high pulse rate was noted after exercise or in which undue dyspnea and faintness were observed, the examiners were called and passed final judgment. It is of interest to note that on the basis of the careful methods used, 1,298 individuals with mitral regurgitation were accepted for full duty between July 20 and October 1 out of the 30,697 individuals examined, and that in the same group the diagnosis of irritable heart was made only forty-five times.—Cecil K. Drinker.

A PULSE RATE STANDARD FOR RECRUITS. *T. Addis.* Jour. Am. Med. Assn., Jan. 18, 1919, 72, No. 3, 181-185.—The author and his associates on the cardiovascular board at Camp Lewis, Washington, felt the need of more definite standards for pulse rate change after the ordinary exercise of hopping 100 times on one foot.

The method for getting such standards is given in detail, together with a limited amount of practical material, but, as is said, this is too slight to give definite information as to the value of the standards set up.—Cecil K. Drinker.

PHYSICAL EXERCISES IN USE IN THE CARDIOVASCULAR SERVICE. *B. Smith.* Jour. Am. Med. Assn., Jan. 11, 1919, 72, No. 2, 103-107.—Gives details and photographs concerning exercises which may be used for the "training" or treatment of soldiers with irritable heart.—Cecil K. Drinker.

LUNGS

THE DANGER OF TUBERCULOSIS IN INDUSTRIAL ESTABLISHMENTS. *E. Tedeschi.* Ig. Mod., 1918, 11, No. 6, 126-130.—The government of Italy has made great efforts to prevent and eradicate tuberculosis in the army, but has neglected this work in the industrial establishments. Workmen infected with tuberculosis are frequently found working in factories where they form a source of infection for their fellow-workmen. Since the government has introduced compulsory sickness insurance in the auxiliary war establishments, and is about to extend this insurance to all factories, it is of the highest interest to the state to keep these establishments clear from tuberculosis. The employment of tuberculous workingmen is due to various causes. Frequently men who have been rejected from the army on account of "weakness" hide under this weakness a latent tuberculous process and yet, under the stress of circumstances, are given work. Others who had previously been free from tuberculosis are infected during their work, but keep their condition secret from the factory physician. In many cases strong and healthy men who had always lived in the open air are employed in protracted night work to which they are unaccustomed and sooner or later take tuberculosis. A close supervision of the men and a careful examination on their entering the service would greatly reduce the number of tuberculous cases in factories. In this work the general practitioners should coöperate with the factory physicians.—Albert Allemann.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

CONTRIBUTIONS REGARDING THE TOXIC ACTION OF AROMATIC NITRO-COMPOUNDS. *H. Ilzhofer.* Arch. f. Hyg., 1918, 87, No. 5/6, 213-231.—The clinical effects of various nitro-compounds met with in the explosive industries have been recently studied in large numbers of cases by Kölsch, and the present paper reports the results of collaborative tests on animals with trinitroxylol, trinitrophenol or picric acid and trinitroanisol. Tests were made on cats and a few rabbits and were frequently interrupted by a scarcity of animals. The test substances were given by mouth in ascending doses from 0.5 to 2 gm., per kg. body weight, in aqueous acacia suspension, in lemonade and in 20 per cent. alcohol, and were applied to the shaven skin and injected subcutaneously.

Trinitroxylol, which is almost insoluble in cold alcohol and insoluble in water, produced no decided toxic symptoms regardless of the method of internal administration, except some loss of weight and decreased appetite. Locally it merely yellowed the skin. Apparently nitrobenzol is rendered less toxic by the introduction of one CH_3 group in nitrotoluol, and non-toxic by the two CH_3 groups of trinitroxylol. The lack of toxic action is also due in part to its insolubility.

These results agree with the almost complete lack of records of trinitroxylol poisoning in industry.

Picric acid, readily soluble in water and more so in alcohol, produced marked toxic symptoms in animals. Symptoms produced were loss of appetite, loss of weight, weakness, evidences of pain and death in three days after the dose reached 2 gm. per kg. Autopsy showed brownish-yellow swelling of the gastric mucosa, congestion of the liver and kidneys, with more or less staining, and picric acid in the urine. Methemoglobin was never found *in vivo* or after death as has been reported in man. Inhalation of fumes and dust caused intense irritation of the mucosæ and rapid, labored respiration, but the animals recovered completely on removal from the picric atmosphere. Skin applications caused staining of the skin and hair, but no constitutional symptoms. Subcutaneous injections of 0.2 to 0.3 gm. per kg. proved fatal in twenty-four hours, but without methemoglobin formation. Doses of picric acid proved toxic when equal doses of nitroxylol, nitrotoluol and nitronaphthalin were harmless.

Severe damage to health was not observed in man and tolerance seems to be relatively great. Various mild disturbances have been noted in individual workers, such as staining of skin and hair

and more or less irritation of the skin and mucous membranes.

Trinitroanisol, much more soluble in alcohol than in water, proved toxic sooner and in smaller doses when given in alcohol. Experimental animals died after four weeks when the dose was given in water, with the same postmortem findings as for picric acid. Skin applications caused severe purulent dermatitis. No cases of general poisoning from trinitroanisol in industry are recorded, but its use is only of very recent date. Most workers complain of painful moist pustular eczemas with itching and often with inflammatory swellings of the lymph glands. In addition many suffer with a general indisposition, headache and loss of appetite.

Skin sensitiveness and inflammations of the conjunctival, pharyngeal and laryngeal mucosæ are the only lasting results noted.

Trinitroanisol is less toxic than picric acid, due in part to the CH_3 group and in part to its decreased solubility, but is more irritant to the skin.

As precautionary measures susceptible persons should be excluded from the industry and workers should change their working garments frequently and practice strict cleanliness of person.—Henry F. Smyth.

AN INVESTIGATION OF THE DETOXICATION OF METHYL ALCOHOL. *J. Pohl.* Arch. f. exper. Path. u. Pharmakol., April, 1918, 83, No. 3/4, 204-220.—The author mentions the well-known, relatively slow rate of oxidation and excretion of methyl alcohol in comparison with ethyl alcohol. Methyl alcohol in dilute solution was injected into the peritoneal cavity and intravenously to insure complete absorption. After varying intervals of from twenty-four to seventy-two hours the animals were killed and the amount of alcohol, remaining in various tissues and removable by distillation, was determined by the bichromate method, control experiments having shown the method to be satisfactory. Relatively large amounts were found in the blood, the muscles, and the liver, but only a very little could be recovered from the brain. Other experiments suggested that the brain may destroy methyl alcohol readily. Nevertheless, Pohl does not ascribe the small amounts of alcohol to be found in the brain to this destructive action, but rather to the lack of any special affinity of the brain for the poison. This, then, would suggest that methyl alcohol has a selective poisonous effect upon nerve tissues which is produced by relatively small amounts, whereas muscle tissues and the liver, in comparison, are little damaged by very much greater concentrations.

A second part of Pohl's paper relates his attempt to lessen the concentration of methyl alcohol in the tissues. Bleeding, the introduction of salt solutions into the blood, and the absorptive power of charcoal when buried under the skin were found to accomplish this.—Worth Hale.

POISONING THROUGH INHALATION OF ETHYLMERCAPTAN. *K. Pichler.* Zentralbl. f. inn. Med., Oct. 26, 1918, 39, No. 43, 689-693.—Through the accidental leakage of a tube containing ethylmercaptan in the chemical collection in the high school in Klagenfurt, ten children between 16 and 18 years old working in the next room became ill. Headache, general malaise and abdominal pain were the common symptons. In three cases there was vomiting and diarrhea. Two of the pupils were compelled to omit school for several days. In one case, followed carefully by Pichler, albuminuria with red cells in the urinary sediment persisted for some time. There was no hemoglobinuria.

It was estimated that 3 gm. of ethylmercaptan had escaped from the tube and at least four and one-half days had been available for this evaporation. This occurred in a room next to the one in which the scholars were seated, a single door connecting the two. As the schoolroom had a cubic capacity of 325 square meters, the toxicity of ethylmercaptan is evidently very high.

Pichler is unable to find other cases of poisoning from this compound, but suggests they may have occurred in industrial chemical operations.—Cecil K. Drinker.

METHEMOGLOBINEMIA DUE TO POISONING BY SHOE DYE. REPORT OF A SERIES OF CASES AT AN ARMY CAMP. *R. E. Stifel.* Jour. Am. Med. Assn., Feb. 8, 1919, 72, No. 6, 395-396. A report of sixteen cases of alarming cyanosis coupled with dizziness, visual disturbances, headache and general malaise traced directly to a shoe dye used to darken russet shoes and shown to contain nitrobenzol.

The author, having ascertained through experiments on mice that the dye in question had marked toxic properties, recounts its effects when used upon his own shoes. He dyed these with the preparation and after four hours developed nausea, headache and visual disturbances. Another volunteer cleaned his shoes thoroughly with alcohol and then saturated them with dye. At the end of six hours he became somewhat cyanotic. "In seven hours his lips and finger nails were purple and he looked ghastly." Spectroscopic examination of the blood revealed methemoglobin, but there were no significant morphological blood changes.—Cecil K. Drinker.

REPORT OF A CASE OF CYANOSIS AT CAMP JACKSON, S. C., DUE TO POISONING FROM SHOE DYE. *R. E. Stifel.* Jour. Am. Med. Assn., Jan. 22, 1919, 72, No. 8, 592-593.—A further case of shoe dye poisoning attributable to nitrobenzol, bringing out the fact that russet shoe dye, even when guaranteed odorless, can produce cyanosis. Shoes dyed should not be worn for three or four days. The orange cleaning fluids and russet pastes for polishing are apparently entirely harmless.—Cecil K. Drinker.

ANILIN, RATHER THAN NITROBENZENE, AS THE POISON IN SHOE DYE. *W. G. Hudson.* Jour. Am. Med. Assn., March 8, 1919, 72, No. 10, 747.—A letter to the journal commenting upon the above communications. (See preceding abstracts.) The effects of both nitrobenzene and anilin are quite similar, but the nitro compounds are more likely to cause hemolysis and to make the blood present the appearance of chocolate. Anilin is more likely, at least in its earlier stages, to cause the dark color described in the above cases. Anilin is quicker in its action, more quickly recovered

from, and shows a particular predilection for penetrating leather rapidly and for poisoning by skin absorption. Special precautions must therefore be taken regarding the shoes worn by anilin workmen. Both agents will cause cyanosis.

Nitrobenzene is widely used as a cheap perfume and was probably present in the preparation used in these cases. Anilin, however, was also probably present in larger proportion, as a solvent or mordant for the dye.—C. K. Drinker.

DUST HAZARDS AND THEIR EFFECTS

EXPERIMENTS ON THE EFFECTS OF DUST INHALATION. *A. Mavrogordato.* Jour. Hyg., Oct., 1918, 17, 439-459.—The author undertook to determine experimentally the reaction and behavior of the lungs to a variety of dusts, some known as harmless and others as dangerous. The dusts studied were coal and shale—known to be harmless—flint and quartz—known to be dangerous—dusts from the flues of furnaces, and pure silica.

Series of guinea pigs were exposed to moderate clouds of the various dusts for two hours a day for twelve consecutive days. Animals from each series were killed upon the completion of the experiments, *i.e.*, after periods of one week, three weeks, three months, and one year, and the lungs were examined.

The results showed that the harmless dusts, such as coal and shale, readily invade the lungs, where they set up a catarrhal condition. The cells which take up the dusts are quickly shed and are eliminated. The dangerous dusts, on the other hand, do not set up any catarrh; the cells which take up these dusts remain fixed and form plaques and areas of fibrosis.

Of extreme interest were experiments in which two sets of guinea pigs were exposed to flint dust and to a mixture of flint and coal dust. It was found that the catarrhal reaction set up by the coal dust helped to clear the lungs of the flint dust, so that the lungs of the guinea pigs exposed to the mixed dust cleared themselves more quickly than when exposed to the flint dust alone.

The author concludes from his experiments that the harmless dusts are those which produce a marked initial reaction with shedding of the epithelium, resulting in the rapid elimination of the dust from the lungs. The dangerous dusts are those which do not produce any initial reaction and which consequently accumulate in the lungs. Dusts that produce an initial reaction tend to carry out with them dust that is inert.—Harry Linenthal.

WOOD DUST—ITS EFFECT ON HEALTH. *R. P. Albaugh.* Ohio Pub. Health Jour., Jan., 1919, 10, No. 1, 14-17.—Contrary to the opinion of some employers, the inhalation of wood dust is undoubtedly a menace, as is evidenced by the unusually large labor turn-over and the large percentage of deaths due to tuberculosis in workers inhaling wood dust. Its action as a predisposing cause to tuberculosis is not the only danger involved. Other detrimental features are: (1) The carrying of infection, (2) the irritation of the respiratory and digestive tracts, (3) the cutting off of light, (4) the danger of fire from the accumulation of wood dust and shavings, (5) the danger of accident from slipping on sawdust or stumbling over accumulations, (6) actual poisoning by certain types of wood which contain active principles known to be poisonous. The prevention of wood dust can be accomplished by proper exhaust systems.—Hazel Andrews.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

THE EPIDEMIOLOGY OF THE SPUTUM-BORNE DISEASES AND ITS RELATION TO THE HEALTH OF THE NATIONAL FORCES. *E. B. Vedder.* Mil. Surgeon, Feb., 1919, 44, No. 2, 123-153.—The sputum-borne diseases are of greater importance than the venereal diseases or than insect-borne diseases to the health of the national forces. Of the sputum-borne diseases, tuberculosis is of relatively less importance because, in general, infection is contracted before entering the camps. The prevention of lobar pneumonia is especially important because of a high mortality, which has not been greatly reduced under the modern methods of treatment. The problem of pneumococcus carriers and their relationship to the occurrence of pneumonia is very great. Primary bronchopneumonia has been relatively unimportant. The admission rate for influenza and bronchitis combined has been greater than for venereal diseases. Articular rheumatism, other than chronic joint inflammations, and cardiac affections and general septicemias following tonsillitis make tonsillitis an important sputum-borne disease. The admission rate for measles was high and the mortality higher than that for any other disease. Deaths were due to complicating pneumonia. Special measures are recommended to prevent measles. Mumps has not been important because incident rate has not been great and its mortality practically nil. Scarlet fever is a more serious disease but is relatively unimportant because it is comparatively infrequent and cases tend to be sporadic. Whooping cough is practically non-existent in the army. Diphtheria has been unimportant. Cerebrospinal meningitis is important because of its high mortality and the disabling complications which so frequently occur, although there are relatively few cases. The epidemiology is not clearly understood, but indications are that its spread is due exclusively to carriers. Relatively few seem to be susceptible. Carriers seldom develop meningitis themselves. Important factors which enter into the development of the disease are fatigue and exposure to cold. These same factors are also of the greatest importance in the development of the other sputum-borne diseases.

Sputum-borne diseases are caused directly by the transfer of infectious sputum from the infected to the non-infected individuals, and cold and fatigue are important predisposing causes. One of the chief factors which favors the transfer of infectious sputum is the overcrowding of men. Measures to prevent this are discussed. Spitting should be prohibited by order and the order enforced. Education of the men is important. The common drinking cup is rarely met with and should be entirely abolished. Measures taken to prevent undue fatigue and exposure to cold are discussed. Excessive dryness of the air makes the inhabitants of a room more susceptible to the cold and the increased abstraction of water from the respiratory passages leaves them dry and irritated and thus lowers the protective action of the mucous membranes. Protective vaccination against pneumonia gives hope of success, but it does not appear probable that a vaccine could afford protection against streptococci. Meningococcus vaccines have been tried, but it is difficult to obtain information concerning their efficacy.

"The more the subject is considered, the more the emphasis is placed upon the importance of the general methods proposed for the reduction of all the respiratory or sputum-borne diseases, particularly an increase in floor space for each soldier and the conservation of the body heat."—Harold A. Bulger.

THE SEYMOUR-JONES SUBLIMATE-FORMIC ACID METHOD FOR THE DISINFECTION OF ANTHRAX-INFECTED FURS AND SKINS. *V. Gegenbauer.* Arch. f. Hyg., 1918, 87, No. 7/8, 289-315.—Gegenbauer, after an exhaustive series of tests with the Seymour-Jones method of hide disinfection for anthrax, using the originally suggested amounts of chemicals (0.02 per cent. mercuric chloride in 1 per cent. aqueous solution of formic acid), and time of exposure (twenty-four hours at 20 C.), and increasing amounts and time intervals, arrives at the following conclusion: A thorough testing of the method shows that with the concentrations suggested and also with greater concentrations within reasonable limits, there is no sure disinfection of anthrax-infected pelts and skins produced within any practical time limits.—Henry F. Smyth.

OCCUPATIONAL AFFECTIONS OF THE SKIN AND SPECIAL SENSES

OCCUPATIONAL CANCER. *H. C. Ross.* Jour. Cancer Research, Oct., 1918, 3, 321-356.—A government investigation of pitch cancer at briquette works in South Wales has brought to light clinical evidence suggesting that a definite, though not specific chemical rather than mechanical action has to do with the causation of cancer. The investigation was extended to other commodities, whose use may give rise to cancer, such as coal tar, pitch, soot, petroleum, petrolatum, grease and tobacco. The study showed that the greater the mechanical irritation produced by these commodities, the less was the cancer incidence. It is suggested that organic nitrogenous substances of a group common to all the above substances may be the specific chemical agents responsible for occupational cancer. In coal tar carbonization commodities it is essential that the coal be bituminous.

An effort was made to find the substance. Clinical facts ruled out previous hypotheses as starting points for the experiments undertaken. The working hypothesis adopted was that cells divide in response to stimuli from without. Hence reproduction of cells is encouraged by cell death among their neighbors, cell death setting free the amino substances which excite cell division among surviving cells. The cells producing cell division are called *auxetics*. These were found in many of the investigated commodities. When artificially introduced into animals, they produced proliferations amounting to benign tumors. Lack of methods precludes, of course, the possibility of proving in human beings that this is the way in which predisposition is acquired.—William Herman.

EAR PROTECTION. *G. B. Trible* and *S. S. Watkins*, U. S. Nav. Med. Bull., Jan., 1919, 13, No. 1, 48-60.—An article showing the comparative efficiency of various devices in common use for protection of the ears from damage by detonations and poison gases. The paper is based on a series of experiments along various lines.—Charles C. Lund.

FATIGUE AND OCCUPATIONAL NEUROSES

REMARKS CONCERNING THE "WORK HYGIENE RESEARCHES" OF W. WEICHARDT AND H. LINDNER. *E. Weber.* Arch f. Hyg., 1918, 87, No. 5/6, 207-212.—The findings reported by Weichardt and Lindner using Weber's method of studying fatigue by means of the plethysmographic "Work Curve" are referred to and criticized, but are not given in sufficient detail to make criticism very intelligible without reference to the original articles in the *Monatschrift für öffentliche Gesundheitspflege*, 1916, No. 2, and the *Archiv für Hygiene*, Vol. 86, No. 2/3. Weber considers their conclusions too sweeping and generalized and not fully supported by their published results. He questions the statement that old age is of itself responsible for a negative work curve, and he accepts with reserve their findings of a negative curve in school children after morning lessons, claiming that they have not excluded the pathologic influence of anemia. He thinks that their results may have been vitiated by errors in technic, which are only avoidable in such difficult subjects by prolonged practice with the method and careful review by skilled observers. He recommends in such cases, and always where the effect of intellectual effort is to be studied, that tests be made with the subject reclining as well as sitting. Especially in difficult cases Weber prefers the more sensitive

instrument of Lehmann to that of Kronecker.—Henry F. Smyth.

THE ONE-BREAK DAY. Editorial. Eng., Jan. 3, 1919, 107, No. 2766, 19-20.—Gordon M. Fair.

INDUSTRIAL ACCIDENTS: INJURIES, BURNS, ETC.: OCCURRENCE, TREATMENT AND PREVENTION

COKE-OVEN ACCIDENTS IN THE UNITED STATES DURING 1917. *A. H. Fay.* U. S. Bur. Mines, Tech. Paper 206, 1918.—An eighteen-page pamphlet of statistics relating to fatalities and injuries in bee-hive and by-product coke-ovens, and one table for coal mines. A list of papers published by the Bureau of Mines dealing with allied subjects is appended.—C. K. Reiman.

NUTRITION

THE VITAMINES IN GREEN FOODS. *B. Osborne* and *L. B. Mendel.* Jour. Biol. Chem., Jan., 1919, 37, No. 1, 187-200.—A comparison of the quantities of water soluble and fat soluble vitamines in spinach and cabbage leaves, alfalfa, clover and timothy plants. It seems that the green vegetables supply an important addition to the diet because cereals, meats, potatoes, fats, and sugar probably furnish too little of either of these vitamines to meet fully the requirements of an adequate dietary.—Alfred C. Redfield.

THE ANTISCORBUTIC PROPERTY OF VEGETABLES. I. AN EXPERIMENTAL STUDY OF RAW AND DRIED TOMATOES. *M. H. Givens* and *H. B. McClugage.* Jour. Biol. Chem., Feb., 1919, 37, No. 2, 253-270. —In experiments planned to determine the antiscorbutic potency of different foods and the effect of preservation upon this property, it is found that fresh tomatoes are efficient antiscorbutic agents when added to the diet of the guinea pig. Raw fresh tomatoes dried in a blast of air at either 35 or 40 C. retain a significant amount of their antiscorbutic property.—Alfred C. Redfield.

INFLUENCE OF HIGH TEMPERATURES AND DILUTE ALKALIES ON THE ANTINEURITIC PROPERTIES OF FOODS. *Amy L. Daniels* and *Nellie I. McClurg.* Jour. Biol. Chem., Jan., 1919, 37, No. 1, 201-213.—The effects of usual processes of preparation and preservation of vegetables upon their dietary value were studied. In feeding experiments upon rats it was found that the antineuritic vitamine of soy and navy beans autoclaved at 120 C. or boiled with 5 per cent. $NaHCO_3$, and of cabbage raw, boiled at 100 C., autoclaved at 120 C. or boiled with 5 per cent. $NaHCO_3$, was not destroyed. Contrary to the findings of previous investigators, the extracted water soluble vitamine was also unaffected by boiling in alkaline solution.—Alfred C. Redfield.

HEAT, COLD AND HUMIDITY

EFFECT OF DRY HEAT ON THE BLOOD COUNT IN ANIMALS. *J. B. Murphy* and *E. Sturm.* Jour. Exper. Med., Jan., 1919, 29, No. 1, 1-15.—The blood of mice, rats and guinea pigs shows a sharp fall in the total white count after a short exposure to heat from an electric light. Both the lymphocytes and the polynuclears become diminished. Following this, over a period of weeks, the polynuclears rise progressively and slowly. The lymphocytes at first rise rapidly, and later more slowly. During the time of their rapid increase they may show amitotic division.—George R. Minot.

THE SOURCE OF THE LYMPHOCYTOSIS INDUCED BY MEANS OF HEAT. *W. Nakahara.* Jour. Exper. Med., Jan., 1919, 29, No. 1, 17-23.—Nakahara considers that the pronounced lymphocytosis induced in animals by heat is due particularly to the increased proliferative activity of the germinal centres in the spleen and lymph glands, reacting to the destructive action of heat seen on the lymphocyte cells themselves.

In this same issue of the *Journal of Experimental Medicine* will be found other articles on closely related subjects.—George R. Minot.

WOMEN IN INDUSTRY

FEDERAL POLICIES FOR WOMEN IN INDUSTRY. *Mary Van Kleeck.* Ann. Am. Acad. Pol. Sc., Jan., 1919, 81, Whole No. 170, 87-94.—Although the signing of the armistice has altered the attitude both of the employer and the public toward women in industry, it is probable that a by no means negligible number will continue to work in factories. For this reason the writer points out that it is important that we avail ourselves of the experiences, during the war, of various federal agencies in determining conditions of employment for women.

Among these agencies are the U. S. Railroad Administration, War Labor Conference Board, Quartermaster's Department, War Labor Policies Board. Shortly after the signing of the armistice, the Woman in Industry Service of the Department of Labor, with the approval of the Secretary of Labor, issued a statement of standards for guiding the employment of women in peace times. These standards provide:

(1) That no women shall be employed more than eight hours in any day or more than forty-eight hours in any week; that there shall be a half holi-

day on Saturdays; that there shall be one day of rest in seven; that at least three-quarters of an hour shall be allowed for meals; that rest periods shall be allowed during the day; and that no women shall be employed between ten P. M. and six A. M.

(2) That equal wages shall be paid for equal work; and that no changes be made in the work in order to justify lower wages for women; that a minimum rate shall be established based upon the cost of living for the worker and dependents.

(3) That comfort and sanitation shall be provided through proper washing facilities, proper and separate toilet facilities, with dressing and rest rooms, adequate cleaning facilities for floors, etc., acknowledged standards of lighting and ventilation, pure and cool drinking water, adequate lunchroom facilities. Only work shall be allotted to women which shall permit them to be seated in comfortable chairs with backs during a portion of the day.

(4) That proper safety and fire precautions must be provided; and first aid equipment should be easily accessible.

(5) That occupations should be selected for women which do not involve undue physical strain through standing or unnatural posture. They should not do work involving the lifting of more than twenty-five pounds, nor should they operate mechanical devices requiring unusual strength. Their work should not expose them to excessive heat, nor to dust or fumes or poisons without proper safeguards. They must not be employed in occupations where the poison risk is greater for women than for men. Proper uniforms with caps and with comfortable shoes are highly desirable.

(6) That no work shall be given out to be done in living or sleeping rooms or in rooms directly connected with them.

(7) That the personnel department have charge of the selection, assignment, transfer, or withdrawal of workers, and that there shall be a woman supervisor for departments employing women. Only workers shall be selected for employment who are physically able to perform the required operations.

(8) That a condition of coöperation shall be encouraged between the management and the employees, so that the machinery for joint negotiation shall exist as it may be needed from time to time.—Charles H. Paull.

THE ORGANIZATION OF WOMEN'S WORK. Riv. di ingegner. san., 1918, No. 1, 3.—The author reviews an article on women's work by H. Joli in *Le Génie Civil.* This question is of great importance to France since it is closely connected with the birth rate which is steadily declining in that country. In order to obviate the ill effects on the birth rate and to reduce infantile mortality, Joli recommends half-day work for women which would permit them to recuperate their strength and to take proper care of their children. He believes that by this system neither the quantity nor the quality of production would be reduced; on the contrary he considers it an indisputable fact that the product of a five-hour work day is better and larger than that of a ten-hour day. In general, women give up factory work after the age of 25, either because their health is impaired or because they desire a change. With a five-hour day they would preserve their strength and would continue to work until they reach the age of 40 or 45.—Albert Allemann.

REGULATION OF WOMEN'S WORKING HOURS IN THE UNITED STATES. Am. Labor Legis. Rev., Dec., 1918, 8, No. 4, 339-354.—The topic headings are: Occupations Covered; Standards of Daily and Weekly Hours; Overtime; Prohibition of Night Work; Legal Hours in Different States.—Charles H. Paull.

INDUSTRIAL SANITATION: ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

INDUSTRIAL SANITARY EQUIPMENT STANDARDS. Editorial. Metal Worker, etc., Feb. 7, 1919, 91, No. 6, 165-167.—The Standard Oil Company of New Jersey has recently adopted certain standards to be complied with in the sanitary equipment of the company's plants. The standards regulate the construction equipment, heating and ventilating of toilet rooms and lavatories in great detail. They are reprinted in this article in a slightly modified form.—Gordon M. Fair.

REQUIREMENTS AND STANDARDS FOR HEATING AND VENTILATING. *W. Nygren* and *R. Hering.* Dom. Engin., Feb. 1, 1919, 86, No. 5, 219-221.—Gordon M. Fair.

HUMIDITY AS AN ACTIVE FACTOR IN VENTILATION, AND THE VALUE OF WINDOW OPENING IN FULLY OCCUPIED ROOMS WITH SMALL TEMPERATURE DIFFERENCE FROM OUTSIDE AIR. *H. Selter* and A. *Esch.* Ztsch. f. Hyg. u. Infectionskrankh., July, 1918, 86, No. 3, 324-332.—Contrary to the generally accepted theory that marked temperature differences between outdoor and indoor air are necessary to secure room ventilation from window opening when there is no wind, Selter and Esch show by laboratory tests that if the room air is more humid than the outer air considerable interchange occurs, in spite of little or no temperature differences. High humidity of room air occurs in fully occupied rooms, such as school rooms, and in many work rooms where hand work is done as well as where the air is artificially humidified, and here window opening is a decided help to ventilation even on quiet summer days.—Henry F. Smyth.

ROOF CONSTRUCTION FOR FACTORIES WITH EXCESSIVE MOISTURE. *F. J. Hoxie.* Am. Arch., Jan. 29, 1919, 115, No. 2249, 181-187.—Gordon M. Fair.

FACTORY HEATING. *A. King.* Dom. Engin., Feb. 8, 1919, 86, No. 6, 254-257.—Gordon M. Fair.

MODERN FACTORY HEATING. *A. G. King.* Dom. Engin. Jan. 4, 1919, 86, No. 1, 27-30 (cont.); Jan. 11, 1919, 86, No. 2, 76-79.—Gordon M. Fair.

DESIGN OF INDUSTRIAL EXHAUST PIPING SYSTEMS. Metal Worker, etc., Jan. 31, 91, No. 5, 144-146.—Gordon M. Fair.

SANITATION IN EMERGENCY SHIPYARDS. *W. L. Stevenson.* Jour. Boston Soc. Civ. Eng., Jan., 1919, 6, No. 1, 1-18.—The writer of this paper was associated with the Department of Health and Sanitation of the U. S. Shipping Board organized under the direction of Col. Doane in Nov., 1917. His paper covers the work done by the Department of Sanitary Engineering in the shipyards under the control of the U. S. Shipping Board. Since the shipyard workers were not subject to orders as were the enlisted men in the Army or Navy the work done was exemplary of industrial sanitation on a very large scale. A great deal of education and diplomacy was necessary to bring about among the contractors the understanding that it was essential to the conservation of man-power to safeguard the workers in preventing sickness, injury or loss of vitality. The Department as a whole devoted its efforts to: 1. medical and surgical work; 2. sanitary engineering; 3. work in the extra shipyard zone, in coöperation with the civil, state and federal authorities. The Department of Sanitary Engineering devoted itself to the supply of cool, clean, pure and readily obtainable water; to the sanitary disposal of excreta; to the securing of proper washing facilities for the workers; to the elimination of flies and mosquitoes and relief from vermin. It secured proper eating facilities for the workers and insured cleanliness in the restaurants. It would be interesting to hear of Mr. Stevenson's work in more detail.—Gordon M. Fair.

SANITARY ENGINEERS GET DIRECT RESULTS IN EAST INDIAN MINING CAMP. *H. N. Jenks.* Engin. N.-Rec., Jan. 23, 1919, 82, No. 4, 172.—How a young American engineer tackled the problem of industrial hygiene and sanitation in an East Indian mining camp in Burma.—Gordon M. Fair.

MEDICAL DISPENSARIES AND HOSPITALS IN INDUSTRIAL PLANTS

SUCCESSFUL HEALTH SUPERVISION BY A MANUFACTURING COMPANY. *J. J. Weber.* Mod. Hosp., Jan., 1919, 12, No. 1, 55-57.—The industrial health work of the Norton Company of Worcester, Massachusetts, is summarized.—Harold A. Bulger.

INDUSTRIAL PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

HOUSING AND TRANSPORTATION PROBLEMS IN RELATION TO LABOR PLACEMENT. *J. Ihlder.* Ann. Am. Acad. Pol. Sc., Jan., 1919, 81, Whole No. 170, 51-55.—A general article on the problems of housing and transportation in their relation to labor.—Charles H. Paull.

INDUSTRIAL HOUSING. Editorial. Arch. and Bldg., Jan., 1919, 51, No. 1, 3-5.—Gordon M. Fair.

HOUSING THE WORKERS—AN UNFINISHED JOB. *G. Cove.* Am. City, Jan., 1919, 20, No. 1, 23-25.—The present status of government housing projects—a challenge to local Chambers of Commerce to meet the emergency which Congress is unwilling to face.—Gordon M. Fair.

WHAT WILL BECOME OF THE GOVERNMENT HOUSING? *R. S. Childs.* Nat. Munic. Rev., Jan., 1919, 8, No. 1, 48-52.—The question of what disposal should be made of the thirty permanent villages built about war industries is discussed by Mr. Childs. He feels it is an opportunity to try out a "local incorporated association of the tenants in which each householder shall have a vote." Thus the houses would become joint property of the community, and would be controlled by joint action, and there would be no question of industrial paternalism. He feels this to be an "opportunity of trying out in America a social experiment of . . . far reaching and fascinating possibilities." A list of the United States Government's fifty-two principal housing projects and their locations concludes the article. There are a number of other articles in this same issue relating to government housing.—Linda James.

THE PRESENT AND FUTURE GOVERNMENT OF WAR COMMUNITIES *E. Cawcroft.* Nat. Munic. Rev., Jan., 1919, 8, No. 1, 52-61.—Linda James.

WHAT ABOUT THE GOVERNMENT HOUSING PROGRAM? *M. Knowles.* Engin. N.-Rec., Feb. 13, 1919, 82, No. 7, 329-331.—Gordon M. Fair.

NEGROES MOVE NORTH. *G. E. Haynes.* Survey, Jan. 4, 1919, 41, No. 14, 455-461.—Contains a brief discussion of working and housing conditions.—Charles H. Paull.

BOSTON'S HOUSING CODE. Editorial. Survey, Jan. 25, 41, No. 17, 557.—Charles H. Paull.

TOWN PLANNING. *T. Adams.* Canad. Engineer, Feb. 13, 1919, 36, No. 7, 215-216.—The factors of nerve power, capacity, concentration and physical endurance of workmen are to be considered the real problem in industrial housing. These things are most valuable to the manufacturer and are destroyed by bad housing conditions.—Gordon M. Fair.

TOWN PLANNING IN CANADA. *J. White.* Canad. Engineer, Feb. 6, 1919, 36, No. 6, 199-200.—Gordon M. Fair.

HOW SOLDIERS WERE QUARTERED AND FED IN SPRUCE PRODUCTION CAMPS. Engin. N.-Rec., Jan. 9, 1919, 82, No. 2, 105.—Gordon M. Fair.

WHAT PART THE ENGINEER PLAYED IN GOVERNMENT HOUSING. Engin. N.-R., Jan. 16, 1919, 82, No. 3, 147-148.—Report of Mr. John W. Alvord, Chief Engineer of the U. S. Housing Corporation. —Gordon M. Fair.

INDUSTRIAL INVESTIGATIONS AND SURVEYS

INDUSTRIAL SURVEYS FOR PHYSICAL READJUSTMENTS. *A. B. Segur.* Ind. Management, Jan., 1919, 57, No. 1, 63-65.—Mr. Segur, Industrial Engineer of the Red Cross Institute for the Blind, outlines the method of investigation which his department follows in determining occupations satisfactory for blind workers. The questionnaire method of conducting surveys is quite unsatisfactory from the standpoint of the Red Cross Institute for the Blind, since: (1) most firms either do not answer questionnaires at all, or their answers are of a perfunctory nature; (2) there is danger that an employer making a survey of his plant will not include all possible occupations in his report, and will consequently be assured that occupations which he has not mentioned are in no wise adapted to blind workers.

Surveys in order to be satisfactory must take into account (a) the job, (b) every possible handicap, (c) conditions of employment. By following this rule it will be found that there are very few positions in plants which are not adapted to workers with some sort of handicap. On the other hand care should be taken that occupations are not selected for handicapped workers where the cost of their training will be out of proportion to the importance of the operation. Furthermore, a handicapped worker should not be encouraged to take a position where it is probable that he will not be able to maintain the standard of production. Surveys of this character are most satisfactorily conducted by men who have had special training in survey and in industrial work, and who will coöperate with the foremen and the employer, thereby obtaining perspective and intimate, detailed knowledge in a final report.

In making a survey of an industry it is better to study carefully a single representative plant than to visit a large number of plants at haphazard.

Mr. Segur illustrates, by drawings, graphic forms which may be used in summarizing final results of a survey. These charts show how the flow of material may be illustrated, and a brief summary of the mental and physical requirements for each operation given in symbol form. A very important adjunct of the flow of material chart is the promotion chart, which points out the lines of promotion from various operations. By the use of symbols these charts can be cross-referenced, thereby coördinating them accurately.—Charles H. Paull.

INDUSTRIAL MANAGEMENT IN ITS HEALTH RELATIONS; SPECIAL TESTS IN THE SELECTION OF EMPLOYEES

THE EXTENSION OF SELECTIVE TESTS TO INDUSTRY. *B. Ruml.* Ann. Amer. Acad. Pol. Sc., Jan., 1919, 81, Whole No. 170, 38-46.—In this discussion Mr. Ruml points out that tests used in classifying men according to mental capacities and trade knowledge in the army suggest the development of similar tests in industry. In organizing various army units it was found that certain numbers of men with definite occupational knowledge were needed. In order to properly fill these positions two forms of tests were employed: the intelligence test and the trade test. A "qualification card" was prepared for each man tested. On this card were recorded his physical, mental, educational, and technical qualifications as determined by the physical examination, an interview, the intelligence test, and the trade test. The fact that the physical examination and the interview are relatively common procedures in employment management leads the writer to omit any detailed discussion of them. The army intelligence tests were devised to give a general idea of the individual's mental alertness. Conditions in the army made it imperative that the tests be given at great speed, that they be scored by a staff which was changing, and that the tests be applicable both to men who understood and who did not understand English.

Three sets of tests were therefore necessary. The first applied to men who could speak English, and could be given to large groups at one time. The second was given to men in groups who could not read English. The third group of tests was given to individuals where one of the other tests seemed to indicate that an unusual mental condition existed. All the group tests were so arranged that it was unnecessary for the soldier to write any words. He indicated his judgment by means of digits, check marks, and underscorings. Because of the definiteness of the tests it was possible to divide men into groups on the basis of their results. The very superior group was classified as A; those of decidedly better ability were B; those of average ability C+, C, and C—; inferior types were marked D and D—; and where arrested mental development was indicated the rating was E. The lowest rating was always checked by an individual examination. The ratings were of value in three ways: (1) they offered a basis for eliminating undesirables; (2) they indicated men of superior ability who sooner or later would become candidates for promotion; (3) they allowed an equalization of abilities in different companies of a regiment.

The application of intelligence tests in industry should produce results analogous to those obtained in the army. An employment manager who informs himself of the intelligence requirements of jobs will tend to eliminate the misfit element by intelligence tests. The intelligence tests, furthermore, should be of value during slack times in selecting men to be laid off. Again, the tests are

important in selecting workers to develop a new process of manufacture. Where special training opportunities are offered in a company's school, the intelligence tests will assist in selecting candidates for the school. Finally, the intelligence tests will indicate the men of special mental alertness who, although they can perform the task to which they are assigned, should not be expected to remain at dull, routine work.

In organizing the trade tests for the army the work was governed by the same procedure as that outlined under intelligence tests. It was necessary that these tests should give an accurate index of the occupational skill of the individual, regardless of what part of the country he came from. This uniformity of rating was absolutely essential. In developing the tests the trade was analyzed to ascertain the kind of work done, and at the same time to discover bits of information or terms characteristic of the particular trade and of no other. In this way tests were developed which, though given rapidly, would determine the degree of knowledge which the individual possessed concerning a particular job.

In applying the trade tests to industry they can be used in three ways: to assist in hiring, transferring, and training. In hiring they determine whether the workman has the knowledge qualifications for the job. In transferring they determine whether he is qualified to undertake different work. As in the case of the intelligence tests they assist in selecting workers who shall be laid off in dull times. In conjunction with the intelligence tests the trade tests are also serviceable in determining whether a worker shall be given educational opportunities. Trade tests tend to establish standards of production which can be more definitely maintained than those based upon individual judgment, which may vary in different persons and at different times.

In developing intelligence and trade tests for industries it must be borne in mind that the purpose is different from that which brought the army tests into existence. Furthermore, only competent individuals should be entrusted with this work. They should appreciate not only the value of the tests but their logical limitations.—Charles H. Paull.

INDUSTRIAL SERVICE AND MUTUAL BENEFIT ASSOCIATIONS

INSTALLING EMPLOYMENT METHODS. *W. A. Sawyer.* Ind. Management, Jan., 1919, 57, No. 1, 7-11.—Dr. Sawyer in his discussion presents an outline of certain phases of personnel work as it has been developed in the American Pulley Company. He points out that there are two forms of compensation for labor: (1) wages; (2) conditions of employment, including attractiveness of surroundings, harmony and smoothness of organization, etc. While the American Pulley Company has attempted to keep pace with the increase in the cost of living, it has at the same time endeavored to add to its organization features belonging in the second class. In order to assist new employees in adapting themselves to plant conditions special attention is given them when they enter the plant. After the new man has been assigned to his locker, he is taken to the foreman and given a personal introduction. While certain difficulties have arisen in obtaining the desired response from the foremen, the company will undoubtedly discover a form of procedure which will be mutually satisfactory. In some departments instructors are provided for new workmen, and a definite effort is made to follow their progress in order that adjustments may be made where men are not fitted for the particular work assigned them.

To provide for the special comfort of workmen a substantial service building has been erected, containing lockers, shower baths, lavatory, play roof, and solarium. This building has been used constantly by the workmen, who appreciate its conveniences.

In order to develop thrift among the workers and to give them a personal interest in the plant, an insurance and stock sharing plan was introduced in 1917. More recently a plant paper was founded, the policy of which has been to develop plant spirit and to interest employees in questions of health, safety, etc. Absenteeism has been markedly reduced by personal visits at the homes of workers as soon as their absence is reported. Through these visits the company has been able to assist the workers in time of illness or of other family troubles.

Although it has not seemed advisable for the company to conduct as elaborate a physical examination as is required in the army, its medical department has examined all new employees. Through these examinations a physical standard has been set which has tended to eliminate undesirable applicants for work. During the past year not a single case of venereal infection has been discovered in applicants.

This personnel work has brought about two satisfactory results from the standpoint of the American Pulley Company. Labor turnover records show a marked decrease, while production has improved without increasing the number of employees.—Charles H. Paull.

ORGANIZED LEISURE AS A FACTOR IN CONSERVATION. *Carol Aronovici.* Am. Journ. Sociol., Jan., 1919, 24, No. 4, 373-389.—An article which dwells on the social values of leisure for every person in a democracy. The discussion of leisure for purposes of recuperation, recreation, and conservation relates directly to the industrial worker.—Linda James.

FINDING THE WAY TO SATISFY THE CREATIVE INSTINCT IN WORKERS.—American Gas Engineering Journal, Jan. 25, 1919, 110, No. 4, 70.—Gordon M. Fair.

INDUSTRIAL HEALTH LEGISLATION AND COURT DECISIONS: MALINGERING

REGULATION OF WOMEN'S WORKING HOURS IN THE UNITED STATES.—Am. Labor Legis. Rev., Dec., 1918, 8, No. 4, 339-354.—See WOMEN IN INDUSTRY.

WORKMEN'S COMPENSATION AND INSURANCE

HEALTH INSURANCE. *Dorothy Ketcham.* Am. Pol. Sc. Rev., Feb., 1919, 13, No. 1, 89-93.—A brief review of the progress of health insurance in Europe and the various states of the United States. The favorable attitude of the American Federation of Labor as expressed at its annual meeting in St. Paul in 1918 is quoted at the close. The article is rich in reference to activities of health commissions and to legislative enactments. —Linda James.

LIMITATIONS OF OCCUPATIONAL DISEASE COMPENSATION. *J. B. Andrews.* Am. Labor Legis. Rev., Dec., 1918, 8, No. 4, 311-315.—"Three possible methods by which occupational diseases may nominally be brought under workmen's compensation laws." Their weakness. Health insurance as a solution of the difficulty.—Charles H. Paull.

YEAR'S DEVELOPMENTS TOWARD HEALTH INSURANCE LEGISLATION. *S. De Leon.* Am. Labor Legis. Rev., Dec., 1918, 8, No. 4, 316-318.—Statements of prominent persons in favor of health insurance.—Charles H. Paull.

SAFETY DEVICES

A PLAN FOR SHOP SAFETY, SANITATION AND HEALTH ORGANIZATION. N. Y. State Dept. of Labor, Special Bull., No. 91, issued by the Industrial Commission, Jan., 1919.—This bulletin was written to supply the need of a definite plan for a safety organization which would lead to fewer accidents and to a more efficient working force. The plan was drawn up from the information gained through field investigation and through literature, and is thus based on the actual experience of many plants. This plan gives the workers a direct voice in the conduct of affairs leading to their welfare, and gains their coöperation by giving them a large part of the responsibility for successful accomplishment of the scheme.

The safety organization, as described, is composed of the following divisions: executives' committee, foremen's committee, workers' committee, and safety supervisor. The functions of each division are detailed. Methods of inspection, investigation and supervision are outlined, as well as methods of disseminating "safety" information among the committees and the workmen. Rules are suggested regarding meetings, amendments, and duties of foremen and workers, and suggestions are given concerning the guarding and planning of machinery, lighting, ventilation and sanitation.—Hazel Andrews.

REHABILITATION OF DISABLED EMPLOYEES

SOME PROBLEMS OF THE PARTIALLY DISABLED, IN WAR AND INDUSTRY. *Irene S. Chubb.* Am. Labor Legis. Rev., Dec., 1918, 8, No. 4, 294-305.—This article takes up, in order, the essential steps of a sound rehabilitation policy, together with certain dangers which present themselves in the working out of such a policy. The first step in rehabilitation is bedside therapy. The aim of this work is twofold: first, to develop the creative impulse; and secondly, to maintain the morale of the man during his recovery. This work may take a variety of forms of hand work, supplemented by careful guidance from specially trained directors. Bedside therapy should begin at the moment the individual is sufficiently strong to regain an interest in himself and his future, so that he will be allowed no moment of undirected thought which might lead to temporary and even ultimate discouragement. The experience of workers with cripples in the past who have become paupers through lack of proper initial attention, emphasizes the importance of this work.

When the cripple is sufficiently recovered he is ready to take definite training which will fit him for remunerative employment. Although we are particularly attracted at the present time by the war cripple, the industrial cripple is ultimately a more serious problem. It is estimated that 80,000 persons receive permanent disability annually in industry. The training which is offered to the war cripple should be made equally available to these people. Massachusetts, in 1918, was the first state in the Union to establish a division for the training and instruction of industrial cripples.

Vocational rehabilitation presents several problems which have not as yet been solved satisfactorily throughout the country.

(1) The cripple must, first of all, be assured that he will not be penalized by losing his compensation when he becomes remuneratively employed. He should not be penalized even though his employment may bring him greater returns than he received prior to his injury, because the fact of his injury may shorten his working life. A policy such as that defined by the compensation law in New Jersey is unsatisfactory because it places an arbitrary value on certain disabilities without taking into account the age at which the

worker is disabled, or the handicap which the disability presents in his particular occupation. The Industrial Accidents Commission of California bases its awards on three factors: (a) injury, (b) occupation, (c) age, thereby forming a more satisfactory basis for compensations. The federal law for vocational re-education attempts to solve the problem in a more general way by basing its ratings of compensation on the average loss of earning power for a certain disability, and permits a readjustment of these ratings from time to time.

(2) The cripple must be assured that he and his family will be cared for during the period of re-education. The federal government at the present time grants the family allowance and compensation to the war cripple during the time he is preparing to re-enter industry or take up other work. This scheme should be adopted in principle at least by the states and applied to industrial cripples. Scholarships could well be granted during re-education on condition that they be later repaid to the state, thus reducing the expense of upkeep to the state during training to a minimum.

(3) Opportunity for vocational guidance and employment should be available to all cripples. In selecting an occupation for re-education the cripple should be directed, under ordinary circumstances, to his old work or to a closely related occupation. The agency for re-education should establish a definite connection with public employment offices. The public employment agency is more satisfactory than one conducted by a training board because: (a) the public employment office will be more apt to place men under normal working conditions; (b) employers are more accustomed to using public employment offices; (c) there will be less danger of receiving calls from employers seeking only cheap labor; (d) public employment offices will be in touch with a wider field of employment.

(4) Compensation laws must be such that employers will not hesitate to hire cripples. Four schemes have been proposed for eliminating this difficulty: (a) A law (unjust to the worker) by which he waives all right to compensation; (b) a law by which the employer compensates the worker on the basis of the disability which would have resulted had not the worker been previously disabled; (c) a law by which the employer is liable for compensation for both injuries minus the compensation for the injury not received in his employ; (d) a law, adopted in New York and Ohio, which charges the employer for the disability received at his plant, while the state pays the difference between the whole disability and the last partial disability. This latter plan seems the most satisfactory of the four.

The great need of this country, at the present time, is a system of uniform state compensation laws which will encourage the industrial cripple to work rather than to become a burden to himself and to the community.—Charles H. Paull.

REHABILITATION AND VOCATIONAL TRAINING OF WAR CRIPPLES. *Constance Drexel.* Am. Labor Legis. Rev., Dec., 1918, 8, No. 4, 308-310.—Brief outline of the work of various agencies engaged in care of disabled soldiers.—Charles H. Paull.

PLACING SOLDIERS ON FARM COLONIES. *E. Mead.* Ann. Am. Acad. Pol. Sc., Jan., 1919, 81, Whole No. 170, 62-72.—An outline of a practical method of procedure in developing farm colonies for soldiers. Such a scheme would be of great value in assisting disabled soldiers to means of livelihood. —Charles H. Paull.

RECONSTRUCTIVE SURGERY. THE PROBLEM OF RECORDS. *J. A. Nutter.* Jour. Am. Med. Assn., Feb. 8, 1919, 72, No. 6, 410-411.—The descriptive terms applied to movements of joints have been varied and inexact. This fact has been particularly noticeable in Canada, where the board of pension commissioners has been overwhelmed with reports from physicians on joint disabilities. These depended almost entirely on words for accuracy and were extremely difficult to interpret and very unsatisfactory. The government was forced to print charts, showing the extremities with possible ranges of motion indicated in degrees. These, examining surgeons were required to fill and they have proved satisfactory in the case of the large joints but less successful in the case of the hands.

Experience has shown that the best type of record for hand disabilities is the Hart House Chart accompanied by a rapid free-hand diagram of the bones and joints. A sample Hart House Chart is as follows:

Hart House Chart

	Movement	
Middle Finger (Left)	Active	Passive
Prox. flex.....	20°	35°
Ext. .....Lacks	5° of full	Full
Med. flex.....	40°	45°
Ext. .....Lacks	20° of full	Full
Dist. flex.....	20°	45°
Ext. .....Lacks	30° of full	Full

—Cecil K. Drinker.

ABSTRACT *of the* LITERATURE

OF

INDUSTRIAL HYGIENE

VOLUME I JUNE, 1919 NUMBER 2

GENERAL

THE UNIVERSITY OF PUBLIC HEALTH. *G. E. Vincent.* Science, March 14, 1919, N. S. 44, No. 1263, 245-251.—Abstract of an address delivered at the anniversary exercises of Johns Hopkins University, Feb. 27, 1919, by George E. Vincent, president of the Rockefeller Foundation. The author states that the new plans of the Harvard Medical School for research in occupational diseases, for demonstration in industrial hygiene in connection with factories and stores, for the training of a special personnel, and for the publication of a journal, are significant of the University attitude towards the problems of public health. —G. Fair.

DEMOCRACY AND PUBLIC HEALTH ADMINISTRATION. *C. J. Hastings.* Am. Jour. Pub. Health, March, 1919, 9, No. 3, 172-179.—In his address the president of the American Public Health Association (Dec. 9, 1918), discusses the various phases of public health administration, and makes reference also to industrial hygiene which, in his opinion, should be considered as part and parcel of community hygiene.—G. Fair.

HEALTH OF OHIO COAL MINERS. *E. R. Hayhurst.* Ohio Pub. Health Jour., Feb., 1919, 10, No. 2, 63-69.—This is a report of an investigation made by the author in co-operation with the State Department of Health to get more knowledge of the status of health, of vital statistics, and of public health administration in coal mining districts, and to find what provisions exist for meeting hazards of sickness and death. The extent and nature of the industry in Ohio are given, with descriptions of the districts visited. Drift mines, room-and-pillar and shaft mines are the important kinds. Black powder is the chief blasting substance used. The chief mine gases are fire damp (methane), black damp (deficiency of oxygen) and white damp (carbon monoxide). The state laws provide for good ventilation and the miners do not suffer much from the ill effects of mine gases. The temperature is nearly constant and the humidity high. Dust constitutes the chief danger to health. The eight-hour day is universal, and over-time infrequent.

Absenteeism averages about ten persons per day. Labor turnover is more pronounced in large mines. Ninety per cent. of the employees are foreigners, largely from the southern and eastern parts of Europe. The majority (87 per cent.) are between 22 and 59 years of age. The influenza epidemic was very severe, causing many mines to shut down completely. The inspection system is concerned with prevention of accidents, explosions, fires and asphyxiations and although it is short of man power, it is of great benefit to the general health. Wages were good at the time of inspection.—Hazel Andrews.

SHIPPING BOARD PROTECTS HEALTH OF SHIPYARD MEN.—Eng. N.-Rec., Feb. 27, 1919, 82, No. 9, 422.—A brief summary of the work of the United States Shipping Board.—G. Fair.

PRODUCTION OF EXPLOSIVES IN THE UNITED STATES DURING 1917. *A. H. Fay,* U. S. Bur. of Mines, Tech. Paper 192.—A twenty-page pamphlet relating to the amount and distribution of the manufacture of explosives in the United States, to the various amounts employed in different uses up to 1917, and to the amounts exported. —C. K. Reiman.

TREATMENT OF INDUSTRIAL PROBLEMS BY CONSTRUCTIVE METHODS. U. S. Dept. Labor, Working Conditions Service, Washington, 1919.—This paper is a brief outline of the activities and proposed developments in the Working Conditions Service. In this service three divisions have been established.

1. Division of Industrial Hygiene and Medicine.
2. Division of Safety Engineering.
3. Division of Labor Administration.

In addition a Research Branch of the service has been constituted in order to correlate the activities of these divisions, and to extend their efficiency. Employers may communicate with the Director General of the service, Mr. Grant Hamilton, if they wish to make use of the activities of any of the above-mentioned divisions.—C. K. Drinker.

HOSPITAL SERVICE IN RURAL COMMUNITIES. *E. C. Meyer.* Jour. Am. Med. Assn., April 19,

1919, 72, No. 16, 1135-1136.—This article and those continuing it are of indirect but great industrial interest, since so often in small communities the plant hospital must serve not only the employees but the entire neighboring country side.

With the demonstration that both old and young suffer less from sickness, and that life is longer in the cities, the rural health problem and with it the rural hospital problem have come strongly into the foreground.

The position of the rural hospital has been a hard one. Adequate treatment of the sick is circumscribed by difficulty in getting proper buildings, efficient staffs of physicians, and well-trained nurses. Educational work, on clinical lines, is seriously limited by scarcity of clinical material. Research is largely out of the question, and social work has been prevented by lack of vision in some cases and lack of assistance in others. These recognized functions of the city hospital have thus fallen more and more in the background, whereas the idea that the rural hospital should be above all else an educational institution through which the community may be taught the fundamentals of hygiene and right living has steadily been given prominence. Coupled with this has come the suggestion that the rural hospital may be made a useful mechanism in surveying community conditions and needs in matters of health and sanitation. There seems to be little doubt that if the rural hospital achieves these latter purposes of prevention successfully, it will have accomplished more effective work for the community than can now be represented on the basis of treatment alone.

Many questions arise as a result of these considerations. Is it necessary to maintain rural hospitals so precisely on the expensive city pattern? Is it not possible that in the development of rural hospitals on their present basis we are making the same expensive mistake as has been made in the extreme expenditures for isolated tuberculosis hospitals, which are an admitted failure in reducing the disease incident throughout the country? With the easy transportation of to-day should we not specialize more completely upon the side of prevention in our rural hospitals, making minimum provisions for treatment and sending bad cases for expert care to nearby cities?

Some of the reasons why it is worth while to develop this new idea in regard to rural health become apparent on considering the following data. (*Continued*).—C. K. Drinker.

Hospital Service in Rural Communities. *E. C. Meyer.* Jour. Am. Med. Assn., April 26, 1919, 72, No. 17, 1219-1223.—The U. S. Census of 1890 brought out the fact that sickness is more prevalent in the country than in cities. More recent material accumulated by the Metropolitan Life Insurance Co., the State Charities Aid Association of New York in Dutchess County, N. Y., the Department of Health of New York City, and the Community Health Station in Framingham, Mass., brings out the fact that the sickness rate of this country varies from 20 to 25 per thousand, and the disability rate from 16 to 20 per thousand. When minor and trivial illnesses of all sorts are included, and particularly ailments which should have medical or dental advice or treatment, the number of cases of sickness discovered is greatly increased. The rate in such cases has been found to run at from 40 to 70 and more, per thousand, according to the thoroughness of the survey.

Charts and tables are now presented showing how the rural death rate has remained fairly constant, while the urban death rate has declined until a considerably lower point is reached. Unfortunately, no adequate figures exist on rural morbidity.

Finally figures are given upon the economic loss due to sickness. The average duration of sickness among the general population (which includes wage earners) appears to be from six to twelve days a year. Charitable agencies uniformly find sickness to be one of the chief factors creating dependency (*Continued*).—C. K. Drinker.

SYSTEMIC OCCUPATIONAL DISEASE: OCCURRENCE, TREATMENT AND PREVENTION

CIRCULATION

Two New Diagnostic Methods for Patients with Cardiac Disease. *J. E. Benjamin* and *E. R. Brooks*, Jour. Am. Med. Assn., March 8, 1919, 72, No. 10, 707-709.—The object in the first instance is to separate true tachycardias of persistent type from tachycardia due to excitement—to the circumstances of the examination. The individual on direction drops the head and bends forward to about an angle of 45 degrees, whereupon the rapid heart will retard to a remarkable degree very quickly, sometimes to half of the original rate if the case is one of simple tachycardia due to excitement. True persistent tachycardia is not affected at all.

The intensification of abnormal presystolic sounds through inhalation of amyl nitrite as first recommended by Morison has been found valuable. In ten instances out of forty-eight suspected cases of mitral stenosis positive diagnosis has been made by listening to the presystolic sounds during amyl nitrite inhalation.—C. K. Drinker.

Observations Upon Fainting Attacks Due to Inhibitory Cardiac Impulses. *T. F. Cotton* and *T. Lewis.* Heart, April, 1918, 7, No. 1, 23-34.—The authors found fainting attacks occurring frequently from very slight stimuli in soldiers who suffered from irritable heart. As a rule the so-called premonitory symptoms are a definite part of the attack. The authors were fortunate enough to observe several such attacks and found that the anemia of the brain was due to a reduction in pulse rate as well as in the blood pressure. The fall is rather slow and the recovery

is even slower. The association of lowered rate with the fall in pressure points decisively to a disturbance of the inhibitory mechanism. The final proof that these attacks are of vagal origin is furnished by the fact that they are relieved by atropin.—C. C. Lund.

THE EFFECT OF CERTAIN SENSORY STIMULATIONS ON RESPIRATORY AND HEART RATE IN CASES OF SO-CALLED "IRRITABLE HEART." *J. C. Meakins* and *R. M. Wilson.* Heart, April, 1918, 7, No. 1, 17-22.—The authors noticed that cases of "irritable heart" showed a marked increase in pulse and respiratory rate from emotional stimuli as well as on exertion. A quantitative method of testing this when the patients were surprised, either by a pistol shot or flash of light, was worked out. In all cases the response of the patients was greater than of the controls. The authors found that the response of the pulse rate was more constant and to a greater degree in the various cases than the change in the respiratory rate. The increased pulse varied from 3 to 45 beats per minute after the flame and from 2 to 22 beats per minute after the pistol shot.

On going over the records of the individuals, it was found that, with two exceptions, those patients with the greatest incapacity for work showed the most marked increase in pulse rate on sensory stimulation. The authors say that their best results were with the flame test, but it has occurred to the reviewer that a louder noise than the pistol used might have given the same results as the flame tests.—C. C. Lund.

ORTHODIAGRAPHIC OBSERVATIONS ON THE SIZE OF THE HEART IN CASES OF SO-CALLED "IRRITABLE HEART." *J. C. Meakins* and *E. B. Gunson.* Heart, April, 1918, 7, No. 1, 1-16.—The authors worked with a large number of soldiers in the Military Heart Hospital at Hampstead. They found a slight decrease (0.7 cm.) in the average size of "irritable" hearts, compared with normal. The "irritable" cases with diffuse apical impulse were found to be the same in this regard as those that did not have this sign. The authors also found that rest in bed results in an average increase of 0.7 cm. in the size of the transverse diameter of the heart in these cases. After strenuous Swedish exercises the patients that did not have symptons showed a decrease of 1.10 cm. in the size of their hearts, while patients that showed symptoms did not show any decrease.—C. C. Lund.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

DINITROBENZOL POISONING. Office internat. d'hyg. pub., Oct., 1918, 10, No. 10. Abstract of article by *O. Steiner* in Cor.-Bl. f. schweiz. Aerzte, Aug., 1918, p. 1139.—The author observed seven serious cases of dinitrobenzol poisoning in a brief interval of time. He finds that exposure to these vapors produces a bluish coloration of the mucous membranes accompanied by headache, general malaise, etc. These symptoms as a rule disappear two or three days after stopping work. Tolerance may be established, repeated exposures in these cases only producing the blue color in the mucous membranes. Dinitrobenzol is a poison by virtue of its action on the blood and central nervous system. It reaches the body less by means of the lungs than directly through the skin, from the wearing of clothes saturated with it. Workmen should be instructed as to the toxicity of this substance and vigorous measures should be taken in the industries to eliminate direct contact with dinitrobenzol.—L. Greenburg.

METHANE ACCUMULATIONS FROM INTERRUPTED VENTILATION. *H. I. Smith.* and *R. J. Hamon,* U. S. Bur. of Mines, Tech. Paper 190.—A forty-six page pamphlet of results of tests and experiments obtained from some Illinois and Indiana coal mines. Discussions are included of causes of sudden methane liberation. A list of papers published by Bureau of Mines on coal mining is appended.—C. K. Reiman.

STUDIES IN A CASE OF ACUTE BICHLORIDE OF MERCURY POISONING TREATED BY THE NEWER METHODS, AND FOLLOWED BY RECOVERY. *J. Rosenbloom.* Am. Jour. Med. Sc., March, 1919, 157, No. 3, 348-356.—Full details for treatment are given and emphasis placed on the importance of combatting the acidosis.—G. R. Minot.

PICRIC JAUNDICE AND ICTERUS. *F. Malmejac* and *C. Lioust,* Jour. de physiol. et de path. gén., April, 1918, 17, No. 4, 685-691.—After a study of 1029 cases of true jaundice or of picric intoxication, the following conclusions are drawn: (1) Examination for picric and picramic acids in the urine, the blood, the cerebro-spinal fluid, and the skin can be made, in the present state of knowledge, with an exactness which may be regarded as absolutely reliable. (2) The presence of biliary pigments does not in any way disturb this examination. (3) The ingestion of picric acid in doses of 30, 60 or even 90 centigrams, causes, usually, a disturbance which is not grave, which has its own peculiarities, and which would not in any case be confused with true jaundice. The authors describe the methods which they employed.—W. B. Cannon.

THE MECHANISM OF THE PROTECTIVE ACTION OF CARBOHYDRATE DIET IN PHOSPHORUS AND CHLOROFORM POISONING. *J. P. Simonds.* Arch. Int. Med., Mar. 15, 1919, 23, No. 3, 362-379.—Simonds thinks the facts he presents are sufficiently well substantiated to justify the opinion that the administration of sugar will prove to be an important therapeutic measure in phosphorus and chloroform poisoning in human beings, and also perhaps in acute yellow atrophy of the liver, and probably in eclampsia.—G. R. Minot.

DUST HAZARDS AND THEIR EFFECTS

A SIMPLE INEXPENSIVE RESPIRATOR FOR DUST PROTECTION. N. Y. State Dept. of Labor, Special Bull., No. 90, issued by the Industrial Commission, Dec., 1918.—C. H. Paull.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

ANTHRAX IN A SOLDIER. *W. H. Norton* and *E. F. Kohman.* Jour. Am. Med. Assn., April 19, 1919, 72, No. 16, 1129-1131.—Report of a fatal case of anthrax in which the bacilli were isolated from a shaving brush of badger's hair or imitation badger's hair.—C. K. Drinker.

REPORT OF THE BUREAU OF COMMUNICABLE DISEASES FOR SEPTEMBER, 1918. Division of Parasitology. Cal. State Bd. of Health, Month. Bull., Nov.-Dec., 1918, 14, No. 5-6, 174.—This article reports fifty-three examinations for hookworm made during September, on miners from the copper mines of Shasta County. Two positive cases were found. A great improvement was noted in toilet conditions of the mines in Amador County.—Hazel Andrews.

OCCUPATIONAL AFFECTIONS OF THE SKIN AND SPECIAL SENSES

OCCUPATIONAL AFFECTIONS OF THE SKIN. *S. D. Hubbard.* N. Y. City Dept. of Health, Month. Bull., Feb., 1919, 9, No. 2, 41-44.—The various occupational affections of the skin are classified according to causes. Those produced by friction, temperature, irritants and infections are mentioned and the means of prevention discussed. A table of the common occupational skin irritants is appended, which shows the irritant, the trade affected, the effect of the irritant and methods of prevention.—Hazel Andrews.

INVESTIGATION INTO DERMATIC EFFECT AND INFECTIVE CHARACTER OF A LUBRICATING COMPOUND. *F. E. Deeds.* U. S. Dept. Labor, Working Conditions Service, Washington, 1919.—The following *Conclusions and Recommendations* which end this article sum up its contents:

1. The chemical composition of the grease may have an irritant action upon the skin of the workers exposed to it. Particularly the unsaturated hydrocarbons in the higher distillates exert a dehydrating action upon the skin and tend to dissolve out the natural fats and oils, leading to a dryness of the skin, with possible subsequent cracking, and possibility of instigation of incipient dermatitis.
2. The grease as it comes to the plant is apparently uncontaminated, but may become contaminated immediately upon being handled by an employee having a pus infection present upon his hands or arms.
3. From bacteriological examination it appears that the grease may well act as a carrier of bacteria, exerting no bactericidal action; hence any contaminating organisms may be carried from one operative to another.
4. From the bacteriological examination, since *Staphylococcus pyogenes aureus* was found in cultures taken from the employees' hands, it is evident that the grease may be contaminated with pus-producing organisms directly from normal hands, merely requiring a cut or an abrasion, or lowered personal resistance, for the bacteria to cause an industrial acne, eczema, or furunculosis.
5. Since the grease is not germicidal, the interchange of "waste" and wiping rags should be advised against, since an infection may be carried in this way.
6. The employees should be provided with gloves, preferably of some impervious or semi-pervious material such as leather, thus lessening the amount of grease reaching the skin of the hands. These should be cleaned frequently.
7. The employees should wash their hands more often with warm water and a good soap. Although it is argued that the hands at once become dirty again, nevertheless this practice lessens the chance of infection. Washing facilities should be provided.
8. In order to counteract the drying action of the oils, there should be provided for the men some sort of ointment, such as lanolin, to be used after the hands are washed.
9. Instruction in personal hygiene should be given the men by the plant physician, and they should be advised especially against anything but medical care for wounds and skin eruptions. Prompt care for the skin eruptions should be given. Overseers and foremen should be required to report to the plant physician all employees having skin eruptions of any kind whatsoever.
10. Clean working clothes should be provided for the men at least once a week.
11. Men who are subject to chapped skin and men who are susceptible to skin irritation, acne, furunculosis, etc., should be transferred, if possible, to some work involving less exposure to a possible infection hazard.
12. The chemical disinfectant used should be such that it can exert its action in the presence of organic matter and can be used in sufficiently low concentration so that the odor is not nauseous to the workers nor the compound deleterious to the skin.
13. Owing to the fact that the bacteriological work in this investigation was done several months after the epidemic of furunculosis had existed, the value of bacteriological results is somewhat vitiated. It is suggested that should a similar epidemic arise in the future there be bacteriological analyses run immediately, cultures being made from the grease, and also from the infected area upon the workmen.
14. A system of morbidity recording should be established.
15. Promiscuous spitting should be abolished, since there is a likelihood of the material handled becoming contaminated in this way.
16. Washing or cleansing of the hands in a common supply of paraffin oil or of petrolatum is advised against, since such practice may lead to a contamination of these constituents of the mixture. Each worker may have his own individual supply, which might be kept in a small bottle for his own use. It is only necessary to pour a few drops on the palm of the hand for cleaning purposes.—C. K. Drinker.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

RUPTURE OF CAST IRON IN CONTACT WITH MIXED ACID. *A. C. Cummings.* Jour. Soc. Chem. Indust., Feb. 15, 1919, 38, No. 3, 31-32.—Serious accidents have resulted from the rupture of cast iron apparatus in contact with nitric acid or fuming sulphuric acid. The rupture is attributed to the expansion caused by the growth of crystals of iron salts within the metal.—C. H. Fiske.

THE SAFETY MOVEMENT IN THE IRON AND STEEL INDUSTRY, 1907-1917. U. S. Bur. Labor Statis., Bull. 234, June, 1918.—A pamphlet of 299 pages containing: Part I.—A review of the safety movement, with special reference to the war; Part II.—Causes and prevention of accidents; charts and illustrations. For brief review of this bulletin see U. S. Bur. Labor Statis., Month. Labor Rev., Dec., 1918, 7, No. 6, 316-317.—Katherine R. Drinker.

INDUSTRIAL ACCIDENTS IN THE UNITED STATES IRON AND STEEL INDUSTRIES. Engin., Feb. 7, 1919, 107, No. 2771, 164-167.—A discussion of Bulletin No. 234, U. S. Bureau of Labor Statistics, from the British point of view.—G. Fair.

A PLAN FOR SHOP SAFETY, SANITATION AND HEALTH ORGANIZATION. N. Y. State Dept. of Labor, Special Bull. No. 91, Jan., 1919.—This bulletin was written to supply the need of a definite plan for a safety organization, which would lead to fewer accidents and to a more efficient working force. The plan was drawn up from the information gained through field investigation and literature and is thus based on the actual experience of many plants. This plan gives the workers a direct voice in the conduct of affairs leading to their welfare, and gains their co-operation by giving them a large part of the responsibility for success.

The safety organization, as described, is composed of the following divisions: executives' committee, foremen's committee, workers' committee, and safety supervisor. The functions of each division are detailed. Methods of inspection, investigation and supervision are outlined, as well as methods of disseminating "safety" information among the committees and the workmen. Rules are suggested regarding meetings, amendments, and duties of foremen and workers, and suggestions are given concerning the guarding and planning of machinery, lighting, ventilation and sanitation.—Hazel Andrews.

"ENGINEERING REVISION" AS SEEN BY SAFETY COMMITTEES. *L. W. Chaney.* Month. Labor Rev., Dec.,1918, 7, No. 6, 1-17.—Engineering Revision is defined as a term covering "all applications of engineering skill which bear upon industrial safety." The discussion is based upon the experience of a large steel company in accident study for the three years ending with 1917. Their 1642 disabling accidents are classified under three heads: (1) Preventable by engineering revision; (2) Preventable by care of worker; (3) Unavoidable trade risk. A study of the data tends to confirm the contention that the "prevention of minor injuries lies largely in the education of the men to correct and safe methods of work," while a majority of preventable major injuries can be eliminated by engineering revision. The discussion concludes with short descriptions of 207 cases of death and major mutilation classified under the three heads previously named.—C. H. Paull.

THE BRITISH INDUSTRIAL "SAFETY FIRST" ASSOCIATION. Engineer, Mar. 14, 1919, 127, No. 3298, 263.—Editorial comment on the aims of this recently established association.—G. M. Fair.

"ARMOR" FOR SAFETY. Factory, Feb., 1919, 22, No. 2, 252-253.—A group of pictures of safety devices used to advantage in different industries. —C. H. Paull.

STARTING NEW MEN RIGHT. Factory, Feb., 1919, 22, No. 2, 242-243.—A brief statement of the procedure in different plants in presenting the "Safety First" idea to new employees. Emphasis is placed upon the fact that new men without adequate instruction are the most serious accident risks.—C. H. Paull.

"REDUCING ACCIDENT RISKS" SECTION. Factory, Feb., 1919, 22, No. 2, 396-406.—Short comments upon "Making Bulletins Interesting"; various sorts of poisoning and their prevention; "Selling Safety to the Big Boss"; "Who Shall Make Safeguards," etc.—C. H. Paull.

HEAD AND EYE PROTECTION. *W. Newell.* Bull. N. Y. State Indust. Commission, Feb., 1919, 4, No. 5, 86.—The writer of this paper, which was presented before the Third Industrial Safety Congress of New York State, calls attention to the seriousness of the problem of head and eye protection. Statistics for a total of one-third of all the fatal accidents occurring annually in the United States show that about 8.3 per cent. are eye accidents; or of the 2,000,000 non-fatal accidents, approximately 200,000 are eye accidents. It is estimated that 15,000 persons in the United States are at the present time blind as a result of industrial accidents. The financial cost alone for maintaining these workers is placed at about $10,000,000, and this figure does not include such factors as the loss of productiveness to the community.

The use of goggles is the most effective means for preventing most eye injuries. A list of occupations in which goggles of various sorts should be used is given. Upon the basis of the character of protection afforded, goggles are divided into four groups: (1) goggles for protection against flying material; (2) goggles for protecting the eyes from injurious light or heat; (3) goggles for protecting the eyes against gases, fumes and liquids; (4) goggles to protect the eyes against dust and wind. Each type of goggles is discussed briefly, emphasis being placed upon the fact that the goggles must be made comfortable to the worker, and that systematic care should be taken of them to repair damaged lenses, and to see that at all times they are fitted to the eyes of the individual using them. Both in fitting goggles and in removing foreign bodies from the eyes no one but a physician should be employed.—C. H. Paull.

ADDITIONAL SAFEGUARDS REQUIRED FOR WOMEN EMPLOYEES. *P. F. O'Shea.* Ind. Management, April, 1919, 57, No. 4, 301-302.—A brief account of some devices for protecting women's skirts from machinery.—C. H. Paull.

INDUSTRIAL SURGERY

EARLY SUTURING OF WOUNDS OF THE FACE. *V. H. Kazanjian.* Jour. Am. Med. Assn., March 1, 1919, 72, No. 9, 626-630.—Experience in base hospitals has shown that primary suturing of facial wounds, unless the injury has been mild and superficial, results poorly. Superficial wounds with no loss of soft tissue and also those with slight or no connection with the oral and nasal cavities may in most instances be closed successfully when first seen. Secondary suturing should be done early, fifth to twelfth day after injury, depending upon the nature of the wound and the condition of the patient. Fixation of the bony fragments and a control of sepsis always precede the operation.—C. K. Drinker.

IMPAIRMENT OF FUNCTION OF THE HAND DUE TO WAR INJURIES. *C. R. Metcalf.* Jour. Orthop. Surg., April, 1919, 1, No. 4, 198-214.—A very much condensed and very didactic article on the treatment of all kinds of traumatic lesions of the hand. If the author is reflecting in his article, the experience of most of the men in the A. E. F., the treatment of injuries of the hand will shortly become a very exact science.—W. Herman.

SPLINT DEVISED FOR TREATMENT OF STIFF METACARPO-PHALANGEAL JOINTS. *F. E. Lewis.* Jour. Orthop. Surg., April, 1919, 1, No. 4, 222-225.—A description of a new splint that has been very successful in the hands of the author in these troublesome cases.—W. Herman.

WOUNDS OF THE FINGERS AND TOES. *P. Descomps* and *R. Ducartaing.* Paris Méd., Jan. 18, 1919, 9th year, No. 3, 50-53.—A brief article advocating immediate disinfection, closure and thorough immobilization of wounds of the fingers and toes. The authors believe that if these measures are carried out thoroughly there is rapid and regular restoration of function, but that imperfect closure or imperfect immobilization and disinfection will give decidedly poor results.—Katherine R. Drinker.

COLLECTED WORK UPON SURGICAL RECONSTRUCTION. Zeitschr. f. orthop. Chir., 1917, 37, 1-833. One full volume.—This volume is a beautifully illustrated and very extensive collection of papers on the orthopedic reconstruction of the German wounded. Practically every phase of such work is covered, and the 750 illustrations present not only mechanical details of a great variety of artificial limbs and appliances, but also appropriate methods for training in their use.—C. K. Drinker.

ON THE PREVENTION AND TREATMENT OF STATIC FLAT-FOOT THROUGH REGULATION OF FUNCTION TOGETHER WITH OBSERVATIONS ON THE STATICS AND MECHANICS OF THE NORMAL FOOT AND FLAT-FOOT. *K. T. Petersen.* Zeitschr. f. orthop. Chir., March, 1918, 38, No. 1-2, 277-297.—A highly technical article, giving orthopedic measures for the prevention and treatment of flat-foot.—C. K. Drinker.

RESULTS OBTAINED BY TREATING WEAK FEET ALONG MILITARY LINES AMONG CIVILIANS. *L. C. Donnelly.* Jour. Orthop. Surg., April, 1919, 1, No. 4, 219-221.—A short summary of the excellent results obtained among a large number of young men by a very simple method, *viz.:* the fitting them out with proper Munson last shoes, and having them do some very simple exercises.—W. Herman.

DICHLORAMIN-T AND PETROLATUM DRESSING FOR BURNS. *T. Sollmann.* Jour. Am. Med. Assn., April 5, 1919, 72, No. 14, 992-993.—An ointment of three parts of surgical paraffin and seven parts of liquid petrolatum has relatively little destructive action on dichloramin-T and can be used as a protective dressing on wounds (burns) treated with dichloramin-T-chlorcosane solution, and even as a basis for a dichloramin-T ointment.

Ordinary petrolatum, irrespective of its color, is very destructive of dichloramin-T and cannot be used effectively in connection with it. (By "destructive" is meant ability to liberate available chlorin during a given period of time.)

Liquid petrolatum can be used in emergencies as a vehicle for dichloramin-T, although it is inferior to chlorcosane. Solutions of dichloramin-T in carbon tetrachlorid are very stable, while those in kerosene or in olive oil lose chlorine rapidly and so deteriorate.—C. K. Drinker.

FATIGUE AND OCCUPATIONAL NEUROSES

THE EFFECT OF FATIGUE ON THE HEART AND CARDIO-SKELETAL QUOTIENT. *W. L. Mendenhall.* Am. Jour. Physiol., Feb., 1919, 48, No. 1, 13-21.—It is shown, by measurements of the threshold stimulus for the ventricle, that cardiac irritability is generally increased as a result of enforced muscular activity. When fatigue of the most profound character is induced the excitability of the ventricle may be depressed. The results are presumably due to fatigue substances in the circulation. The experiments have been made upon frogs and need to be confirmed for the mammal.—P. G. Stiles.

CREATININ AND CREATIN. *M. Wahl.* Arch. de méd. expér. et d'anat. path., September, 1918, 28, No. 2, 105-154.—The conclusion is drawn that fatigue may be the occasion for greatly increased elimination of creatinin, but since the observations were made on severely wounded men the injured tissue may have been the occasion for the observed increase.—W. B. Cannon.

NUTRITION

RESEARCHES IN EXPERIMENTAL SCORBUTUS. *E. Weill* and *G. Mouriquand.* Jour. de physiol. et de path. gén., July, 1918, 17, No. 5, 849-855.—The authors criticize experiments by Holst and Frölich on experimental production of scorbutus in guinea pigs on the basis of using unnatural food. The present experiments were performed on rabbits and cats to study the deficiencies in habitual nourishment which may be produced by heat and preservation. Boiled or sterilized food produced in the rabbit a typical scorbutic syndrome; and freshly sterilized meat, as well as meat sterilized and preserved for many months, caused in the cat a nervous syndrome similar to that observed in pigeons on a diet of rice or other cereals decorticated or sterilized. They found that guinea pigs fed dry grain (barley and oats), died without signs of scorbutus, but those fed germinated grains died with marked scorbutic manifestations, though they lived much longer than those given dry grains. The authors suggest that germination prepares the nutriment for more ready digestion and assimilation, but does not give rise to an antiscorbutic, since the animals suffer from the disease. In the further growth of the cereal an antiscorbutic substance may be developed.—W. B. Cannon.

IS UNDERNOURISHMENT OF SCHOOLCHILDREN DETERMINABLE? *C. F. Th. von Ziegenweidt.* Nederlandsch Tijdschr. v. Geneesk., Feb. 8, 1919, 63, First Half, No. 6, 454-457.—Comparison of curves of nourishment constants, plotted in the years 1914, 1917 and 1918, with a view to finding out the influence of war diet as reflected in these curves.—N. C. Foot.

SOME REMARKS ON THE COMPARISON OF THE STATE OF NOURISHMENT IN SCHOOLCHILDREN. *C J. van der Loo.* Nederlandsch Tijdschr. v. Geneesk., Feb. 8, 1919, 63, First Half, No. 6, 447-454.—A discussion of the methods of obtaining a constant in plotting nourishment curves, with a new formula based on statistics and comparison and criticism of other, older formulae.—N. C. Foot.

HAZARDS OF COMPRESSED AIR, DIMINISHED PRESSURE, GENERATION AND USE OF ELECTRICITY, AND ELECTRICAL WELDING

ELECTRIC WELDING AND WELDING APPLIANCES. Engineer, Feb. 14, 1919, 127, No. 3294, 145-146.—This discussion relates to the use of electric welding appliances in the industries, and among other things, discusses the importance of the protection of the worker during the welding operation.—G. Fair.

WOMEN IN INDUSTRY

FEDERAL STANDARDS FOR THE EMPLOYMENT OF WOMEN IN INDUSTRY. U. S. Bur. Labor Statis., Month. Labor Rev., Jan., 1919, 8, No. 1, 216-230.—The Woman in Industry Service of the Department of Labor has prepared a statement of the standards to govern the employment of women in industry which have been adopted by the War Labor Policies Board. The more important of these standards bear upon the subjects of *Hours of Labor*, *Wages* and *Working Conditions*. No woman shall be permitted to work more than eight hours in one day or forty-eight hours in one week, and shall not be employed between the hours of 10 P. M. and 6 A. M. Each female worker shall have one day of rest in every seven days. Wages shall be established on the basis of occupation and not of sex; women doing the same work as men shall receive the same wages as men. The working conditions in factories shall be governed by the laws and codes of the state in which the work is performed, proper attention being given to ventilation, lighting, safety, etc. No work is to be given out to be done in rooms used for living or sleeping purposes.—L. Greenburg.

PROPOSED EMPLOYMENT OF WOMEN DURING THE WAR IN THE INDUSTRIES OF NIAGARA FALLS, N. Y. U. S. Bur. Labor Statis., Month. Labor Rev., Jan., 1919, 8, No. 1, 231-246.—The Women in Industry Service of the U. S. Department of Labor has issued a report on the employment of women during the war in the industries of Niagara Falls, N. Y.

The four main industries studied were: Abrasive manufacture, chemicals and gases, electrodes and carbon, metals and alloys; in all, twenty-one plants, employing over 9000 persons, being investigated. The chief health hazards disclosed were those due to dusts, fumes and gases, excessive heat and noise, the lifting and carrying of heavy weights, and the lack of adequate ventilation and illumination.

The final recommendations of the report emphasize the importance of the application of dust removal systems and safety appliances in the plants. Health supervision, especially in cooperation with the U. S. Public Health Service, and lastly the great importance of extending the scope of the workmen's compensation law so as to include occupational diseases.—L. Greenburg.

WEEKLY EARNINGS OF WOMEN IN FIVE INDUSTRIES. N. Y. State Dept. of Labor, Special Bull., No. 92, Feb., 1919.—The five industries investigated were paper boxes, shirts and collars, con-

fectionery, cigars and tobacco, and mercantile establishments. The report shows a very considerable rise in women's wages during the past five years. Detailed statistics are given for the various industries.—Hazel Andrews.

WOMEN IN INDUSTRY. Month. Labor Rev., December, 1918, 7, No. 6, 312-315.—A summary of English experience with women munition workers.—C. H. Paull.

INDUSTRIAL SANITATION: ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

BUILDING A HOME FOR AN INDUSTRY. Am. Arch., March 26, 1919, 115, No. 2257, 467-475.—The construction of the dye works of E. C. Klipstein & Sons Co., at South Charleston, W. Va., is described.—G. M. Fair.

INDUSTRIAL SANITARY EQUIPMENT STANDARDS, PART II. Editorial. Metal Worker, etc., Feb. 21, 1919, 91, No. 8, 238-240.—A description of the standards and specifications adopted by the Standard Oil Company for the warm water supply of showers and wash stands and for the supply of cool drinking water to the workers.—G. Fair.

CODE OF LIGHTING FOR FACTORIES, MILLS, AND OTHER WORK PLACES. U. S. P. Health Rep., Jan. 24, 34, No. 4, 103-123.—The divisional committee on lighting, section of sanitation, committee on welfare work of the committee on labor, advisory commission, Council of National Defense, has recommended for adoption in all the states a factory lighting code.

The committee's report cites these advantages of good lighting:

1. Reduction of accidents.
2. Greater accuracy in workmanship.
3. Decreased spoilage of product.
4. Increased production for the same labor cost.
5. Less eye strain.
6. Better working and living conditions.
7. Greater contentment of the workmen.
8. Better order, cleanliness and neatness in the plant.
9. Easier supervision of the men.

The report gives an analysis of lighting, natural and artificial, and offers the following rules, which constitute the basis of the Pennsylvania and New Jersey factory lighting codes:

Rule 1: *General requirement.*—Working or traversed spaces in buildings or grounds shall be supplied during the time of use with artificial light in accordance with the following rules when natural light is less than the intensities specified in Rule 2.

Rule 2: *Intensity required.*—The desirable illumination to be provided and the minimum to be maintained are given in the following table:

	Foot-candles at the Work	
	Ordinary Practice	Minimum
(a) Roadways and yard thoroughfares	0.05- 0.25	0.02
(b) Storage spaces	.50- 1.00	.25
(c) Stairways, passageways, aisles	.75- 2.00	.25
(d) Rough manufacturing, such as rough machining, rough assembling, rough bench work	2.00- 4.00	1.25
(e) Rough manufacturing, involving closer discrimination of detail	3.00- 6.00	2.00
(f) Fine manufacturing, such as fine lathe work, pattern and tool making, light-colored textiles	4.00- 8.00	3.00
(g) Special cases of fine work, such as watch making, engraving, drafting, dark-colored textiles	10.00-15.00	5.00
(h) Office work, such as accounting, typewriting, etc.	4.00- 8.00	3.00

Rule 3: *Shading of lamps.*—Lamps shall be suitably shaded to minimize glare.

Note.—Glare, either from lamps or from unduly bright reflecting surfaces, produces eye strain and increases accident hazard.

Rule 4: *Distribution of light on work.*—Lamps shall be so installed in regard to height, spacing, reflectors, or other accessories, as to secure a good distribution of light on the work, avoiding objectionable shadows and sharp contrasts of intensity.

Rule 5: *Emergency lighting.*—Emergency lamps shall be provided in all work-space aisles, stairways, passageways and exits, to provide for reliable operation when, through accident or other cause, the regular lighting is extinguished. Such lamps shall be in operation concurrently with the regular lighting and independent thereof.

Rule 6: *Switching and controlling apparatus.*—Switching or controlling apparatus shall be so placed that at least pilot or night lights may be turned on at the main point of entrance.

Under the heading of *daylight* the committee considered natural illumination for sufficiency, continuity and diffusion, and set the following requirements:

1. The light should be adequate for each employee.
2. The windows should be so spaced and located that daylight conditions are fairly uniform over the working area.
3. The intensities of daylight should be such that artificial light will be required only during those portions of the day when it would naturally be considered necessary.
4. The windows should provide a quality of daylight which will avoid a glare due to the sun's rays and light from the sky shining directly into the eye, or where this does not prove to be the case at all parts of the day, window shades or other means should be available to make this end possible.
5. Ceilings and upper portions of the walls should be maintained a light color to increase the effectiveness of the lighting facilities from window areas. The lower portion of walls should be somewhat darker in tone to render the lighting restful for the eye. Factory green or other medium colors may be used to good effect.

Natural lighting is classified into:

(a) That case in which windows are located on the sides of the building or in the framework of sawtooth construction, where diffused light from the sky reaches the work during a large portion of the day.

(b) That case in which windows are located overhead on a horizontal or nearly horizontal plane in the form of skylights, thus furnishing direct light from the sky during a large portion of the day.

(c) That case in which prismatic glass takes up the direct light in the sky and re-directs it into the working space.

More in detail, the committee's report goes into a rather exhaustive review of methods of illumination, illustrated, offering suggestions for carrying out the provisions of the code for greatest efficiency.—Ben B. Hoover.

THE WISCONSIN LIGHTING CODE. Am. Arch., April 2, 1919, 115, No. 2258, 500.—This is an abstract of the Wisconsin code, revised in 1918, which is the latest regulation of its kind. The code consists of two parts. The introduction refers to the state laws requiring the commission to fix standards for industrial lighting and describes the methods employed in formulating these laws. The application of the rules and definitions of terms employed and the rules themselves conclude the first part. The second part consists of explanations of the rules. The publication is a condensed and comprehensive manual on the subject. It describes also methods for measuring the intensity of illumination and means for providing natural illumination.—G. M. Fair.

INDUSTRIAL LIGHTING. *C. E. Clewell.* Am. Jour. Pub. Health, March, 1919, 9, No. 3, 196-199. —A brief discussion of the many aspects of industrial lighting with special reference to its bearing upon industrial hygiene.—G. Fair.

FACTORY HEATING. *A. King.* Dom. Engin., March 15, 1919, 86, No. 11, 466-468; 504.—Hot water heating with forced circulation is found to be a reliable and economical method of factory heating.—G. Fair.

DESIGN OF INDUSTRIAL EXHAUST PIPING SYSTEM, PART II. Metal Worker, etc., Feb. 28, 1919, 91, No. 9, 275-277.—A brief discussion of the design of industrial exhaust piping systems from the industrial point of view.—G. Fair.

OPPORTUNITY FOR BETTER VENTILATION IN INDUSTRIAL BUILDINGS. *E. C. Allan.* Dom. Engin., April 12, 1919, 87, No. 2, 44-46.—A general discussion of the advantages of good ventilation in industrial buildings.—G. M. Fair.

PROPER CONSTRUCTION FOR RAIN WATER FILTER. *C. D. Puckett.* Metal Worker, etc., April 18, 1919, 91, No. 16, 491-492.—Details of an arrangement to filter rain water are given. The water is freed from suspended matter by passing upward through charcoal and gravel or coarse sand. —G. M. Fair.

NEW CODE FOR AUTOMATIC SPRINKLERS. Am. Arch., April 23, 1919, 115, No. 2261, 588-595.—A discussion of the rules for fire extinguishing appliances adopted by the Board of Standards and Appeals of New York City.—G. M. Fair.

COVERING FIRE DOORS AND SHUTTERS. Metal Worker, etc. Part 1. March 28, 1919, 91, No. 13, 395-397; Part 2. April 18, 1919, 91, No. 16, 488-490.—A description of the laying of sheets in covering fire doors and shutters with tin.—G. M. Fair.

IMPROVEMENT IN SANITARY CONDITIONS SURROUNDING INDUSTRIAL WORKERS OFFERS A RICH FIELD FOR THE PLUMBING INDUSTRY. Dom. Engin., April 5, 1919, 87, No. 1, 2-4.—A general consideration of the effect of the war upon improving the sanitary equipment of factories.—G. M. Fair.

MEDICAL DISPENSARIES AND HOSPITALS IN INDUSTRIAL PLANTS

THE PLANT DISPENSARY. *C. D. Selby.* Mod. Hosp., March, 1919, 12, No. 3, 217-218.—This article contains practical suggestions for the establishment of dispensaries in industrial concerns. Dr. Selby briefly discusses the location, the rooms required, and the equipment of the dispensary.—H. A. Bulger.

COMPLETE MEDICAL SERVICE PAYS BIG DIVIDENDS. *H. H. Smith.* Hosp. Management, April, 1919, 7, No. 3, 36-37.—A brief account of the work of the Medical Department of the American Rolling Mill Co., Middletown, Ohio. No details are given as to equipment. The personnel to-day consists of three full-time doctors, eleven nurses and three clerks. Eight years ago one physician and a small dispensary represented the entire health establishment.

A main hospital complete in every way with operating rooms, wards, etc., is maintained. In addition the company provides a Colored Hospital, Central Works, and Shop Dispensaries and a Physical Examination Department.

A clinical record is kept of each employee, and if this shows his health to be below par he is given a thorough examination with recommendation for a change of work if such alteration appears advisable. Facilities for laboratory work are provided and the extent of the entire health organization is justified not alone from an altruistic point of view but on the basis that it pays. Unfortunately no statistics appear in support of the latter contention.—C. K. Drinker.

INDUSTRIAL PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

QUANTITY HOUSE PRODUCTION METHODS, CONSTRUCTION BRANCH EMERGENCY FLEET CORPORATION. Am. Arch., March 5, 1919, 115, No. 2254, 353-358; March 12, 1919, 115, No. 2255, 393-398.—The methods employed by the Construction Branch of the Emergency Fleet Corporation for the purpose of insuring the greatest efficiency in the great problem confronting them, are discussed in detail. The engineering and commercial phases are considered.—G. Fair.

THE TOWN OF KIPAWA. *T. Adams.* Canad. Engineer, Feb. 27, 1919, 36, No. 9, 260-262.—A short discussion of the engineering aspects relating to the planning of an industrial community.—G. Fair.

THE GOVERNMENT MODEL VILLAGES. *R. S. Childs.* Survey, Feb. 1, 1919, 41, No. 18.—A discussion of the model villages developed during the war from the standpoint of planning and architecture.—C. H. Paull.

HOUSING CONSTRUCTION AT CRADOCK. Munic. Jour., Jan. 25, 1919, 61.—Some details and labor-saving devices connected with the construction near the Portsmouth Navy Yard of the housing project for five thousand workers.—G. M. Fair.

HOUSING AND WELFARE WORK. Month. Labor Rev., December, 1918, 7, No. 6, 331-337.—An account of the housing schemes of the Ministry of Munitions in Great Britain.—C. H. Paull.

A HOUSING DEVELOPMENT THAT SOLVES THE LODGER PROBLEM. Am. Arch., April 23, 1919, 115, No. 2261, 565-569.—A description of the planning and constructing of the Naval Ordnance Housing Development, South Charleston, W. Va.—G. M. Fair.

INDUSTRIAL NURSING

MONTGOMERY WARD BUILDS EMPLOYEES' HEALTH. *Jeannette D. King.* Hosp. Management, April, 1919, 7, No. 3, 38.—A general review of the duties and opportunities of the industrial nurse.—C. K. Drinker.

INDUSTRIAL MANAGEMENT IN ITS HEALTH RELATIONS: SPECIAL TESTS IN THE SELECTION OF EMPLOYEES

THE PRINCIPLES OF EMPLOYING LABOR. *E. H. Fish.* Ind. Management, Feb., 1919, 57, No. 2, 81-85.—Section heads: OVERHEAD CHARGES; HOLDING MEN TO THEIR JOBS; ESTABLISHING CONTACT; THE WORK OF SELECTION; COMMUNITY RELATIONS; TRANSPORTATION OF LABOR; RESTAURANT FACILITIES.—C. H. Paull.

INDUSTRIAL SERVICE AND MUTUAL BENEFIT ASSOCIATIONS

HOW WE KEEP OUR MEN WELL. *R. W. Elliott.* Factory, Feb., 1919, 22, No. 2, 247-249.—Dr. Elliott tells how he has succeeded in gaining the co-operation, in his health campaigns, of all types of employees in the plant with which he is connected. One of the most important activities of his department has been the development of a series of thirteen health lessons, which are presented to employees in class groups of from twenty to thirty. Each lesson is organized so that it can be presented in an hour period, forty-five minutes of which is on company time. The lessons cover such subjects of everyday hygiene as food, air, water, exercise, hygiene of the various organs, and hygiene of the industry. The final lesson is devoted to answering questions presented by members of the class. These questions may be asked orally, or may be dropped into a question box provided for the purpose during the presentation of the series of lessons. Not only the workers, but also members of their families are invited to attend the final lesson. It is the purpose of Dr. Elliott to develop, in connection with these lessons, a series of motion pictures which will be staged, as far as possible, by people in the plant. He has also found the bulletin board of valuable assistance in carrying health messages to employees.

To illustrate constructive health measures which have been introduced into the plant, Dr. Elliott has discussed his method of dealing with colds. Besides explaining preventive measures, he has, as far as possible, given simple treatment at the plant before sending employees home. In many cases this has prevented employees from relying on their own knowledge of medicine, and has tended to reduce materially the length of time which they are forced to lose.—C. H. Paull.

WORKMEN'S COMPENSATION AND INSURANCE

COMPARISON OF WORKMEN'S COMPENSATION LAWS OF THE UNITED STATES UP TO DEC. 31, 1917. U. S. Bur. Labor Statis., Bull. 240.—For brief review of this bulletin see U. S. Bur. Labor Statis., Month. Labor Rev., December, 1918, 7, No. 6, 318-328.—Katherine R. Drinker.

WORKMEN'S COMPENSATION LEGISLATION OF THE UNITED STATES AND FOREIGN COUNTRIES, 1917-1918. U. S. Bur. Labor Statis., Bull. 243, September, 1918.—A pamphlet of 477 pages, prepared as a supplement to Bulletin 203 of the same Bureau, published in January, 1917, under the title, "Workmen's Compensation Laws of the United States and Foreign Countries." Bulletin 243 presents the enactments, new and amendatory, made by state legislatures during the year 1917 and up to July, 1918, on the subject of compensation of workmen for injuries. Some changes in foreign legislation are also noted.—Katherine R. Drinker.

REVIEW OF ANNUAL REPORT OF COMPENSATION BUREAU OF NEW YORK STATE. Bull. N. Y. State

Industrial Commission, Feb., 1919, 4, No. 5, 82.—C. H. Paull.

THE BASIS FOR COMPENSATION OF THE SOLDIER FOR CARDIAC DISEASE. *J. C. Gittings* and *B. Smith*. Jour. Am. Med. Assn., March 29, 1919, 72, No. 13, 917-921.—This is an interesting summary of the findings used in classifying soldiers with cardiac disease for compensation. Of most value is the grouping of the functional cardiac disorders for determination of disability. As this rests upon detailed technical descriptions the reader is referred to the original article.—C. K. Drinker.

GROUP INSURANCE. *H. W. Kimball.* Ind. Management, Feb., 1919, 57, No. 2, 154-156.—Group Insurance, the writer explains, originated seven years ago, and is insurance given by an insurance company covering all or certain groups of employees in an industry. The insurance provides death benefits usually of $500 or $1000. The insurance company bases its premium charge on the character of work, the plant, and the type of workers rather than upon individual medical examinations. It is argued that group insurance is desirable in that it reduces labor turnover, establishes good will, offers a method of reward for continued services, protects the worker's family, and provides a substitute for trade union benefits.

Trade unions on the whole have been opposed to group insurance. Some of the arguments offered against it are that it attracts the worker to the job without giving him protection for longer than his term of service; it is paternalistic in that it performs a function for the worker which he should perform for himself; and from the standpoint of the employer is more costly than an insurance scheme which he might inaugurate himself. However, the idea of group insurance is growing, and the majority of companies adopting it have not discontinued it.—C. H. Paull.

COMPULSORY HEALTH INSURANCE. *G. E. Tucker.* Am. Industries, Feb., 1919, 19, No. 7, 24-27.—In opposing compulsory health insurance, Dr. Tucker points out that such a scheme in Germany has tended to develop class distinction, and to blind the worker to the particular employment in which he may find himself. He calls attention to unsatisfactory features of the English system. His argument would tend to show that compulsory health insurance fails to take into account the fundamental principles of the health problem, in that it provides for medical care rather than the development of effective preventive procedure on a large scale. He introduces statistical material to show that in some instances at least death-rates and the spread of certain diseases have been greater in countries adopting compulsory health insurance than in the United States where it does not exist. It is also pointed out that an effective scheme of compulsory insurance in which industries or the government would participate would be exceedingly burdensome from a financial standpoint. The real method of attack, in the opinion of the writer, is to eliminate the very high percentage of preventable diseases arising from unsatisfactory social and industrial conditions and aggravated by prevalent ignorance.—C. H. Paull.

PHILADELPHIA COUNTY MEDICAL SOCIETY MEETING OF FEB. 12, 1919. Jour. Am. Med. Assn., March 22, 1919, 72, No. 12, 888-889.—A summary of the health insurance question as developed by the Pennsylvania Health Insurance Commission. Brief accounts of papers presented by William Draper Lewis, John B. McAlister, M.D., Isadore Stern, and Frederick L. Van Sickle, M.D.—C. K. Drinker.

REHABILITATION OF DISABLED EMPLOYEES

PROVISION FOR THE DISABLED, AND VOCATIONAL EDUCATION. Month. Labor Rev., Dec., 1918, 7, No. 6, 80-89.—The task of the Federal Board for Vocational Education in assisting the crippled or disabled soldier is presented as being five-fold: (1) The vocational adviser of the Federal Board meets the disabled soldier before he leaves the hospital, and discusses with him his preference and aptitude for work and the character of work available for men possessing his handicaps; (2) Preliminary vocational training; (3) Placement in the occupation selected for a probationary period; (4) Final placement in suitable employment as determined by training and probationary experience; (5) Follow-up work for a period sufficiently long to be assured that the individual has found employment which will be permanently agreeable to him.

During the period of training compensation is furnished the disabled soldier by the government. In providing training for men the Federal Board has availed itself of existing agencies, which include schools of all descriptions, industrial and commercial establishments, and where satisfactory courses have not been found, special arrangements for such courses have been made.

In connection with the rehabilitation work of the Ford Motor Company, their chief surgeon reports that about 18 per cent. of the men in the Ford plant are below standard in some respect, and that a majority of these men have been placed in positions where the efficiency of the operation has not been reduced by their employment.

The conclusion of this discussion presents a number of observations by Mr. Baker, superintendant of Queen Mary's Workshops in England. Among other things he advocates that after a man has undertaken training, he should sign a contract to complete his course, providing he has been given sufficient time to judge the merits of the work. Mr. Baker also advocates the establishment of national workshops to be operated on a commercial basis for men whose handicaps will not permit them to compete in privately operated industrial plants.—C. H. Paull.

CLASSIFICATION AND RECLASSIFICATION (REHABILITATION) OF WORKERS. *F. Hijmans.* Nederlandsch Tijdschr. v. Geneesk., Feb. 22, 1919, 63, First Half, No. 8, 577-585.—The writer first discusses the necessity of men being fitted both mentally and physically for the particular job in which they are employed, and says that they should be examined as to their fitness by competent persons, both from the standpoint of physical and of mental ability. To undertake such a scheme, it is necessary to plot out what traits make up the desiderata for certain professions, as well as those which are a contra-indication for engaging therein. This is true in the physical as well as in the psychical sense. There is great need for such classification, both for medical men and for the workmen themselves. The social conditions of working men would be benefited thereby, in a way not to be attained by maximum or minimum wage scales, or by insurance schemes, etc. Employers would get better work; society would be benefited by better health, and hence, better production.

Re-classification is more important than classification, i.e., rehabilitation of incompetent or disabled workers, so that they may not become a burden on the community. Also provision of proper orthopedic appliances, artificial limbs, etc., is of great value. A rehabilitation or re-classification institute should be welcomed by the state insurance banks.

The author would put the practical application of this plan in charge of a special commission, whose business would be to institute an active propaganda to get all classes interested—not only medical men, but sociologists, insurance companies, and especially labor unions. The matter should be run by private subscription, until it reached proportions where the government could subsidize it. Strictly government control is not desirable for many reasons. It takes too long to put anything through, there is too much red-tape and its scope is not broad enough. Also the people would mistrust it and would not take the proper active interest in it.

The institute should serve six purposes:

1. Collection of statistics.
2. Giving of practical advice.
3. Introduction of free technical instruction.
4. Rehabilitation of mental and physical invalids.
5. Maintenance of equilibrium in the labor-market.
6. The discovery of those who have become unfit for their present occupation and the accomplishment of their rehabilitation.

There should be a Central Institute with branches. The branches should be situated in labor centers and should work as independently as possible, doing everything except those things which could be better accomplished by the Central Institute (such as the procuring and manufacturing of orthopedic appliances, the supplying of technical instruction, etc.). The patients could be sent to the Central Institute for examination if this were not possible at the branches, or for special examination or for re-examination.

The Institute would have the following duties:

a. Administration.
b. Scientific examinations in sub-bureaus.
c. Employment and placing of candidates.
d. Scientific research.
e. Propaganda and publicity.
f. Technical instruction.
g. A department for the study, experimentation and trial of orthopedic appliances and other remedial measures.
h. An employment bureau and department for social aid.

—N. C. Foot.

PROBLEMS OF THE CRIPPLED MAN IN INDUSTRY. —C. *Hookstadt.* Month. Labor Rev., Dec., 1918, 7, No. 6, 18-30.—The writer presents a statistical discussion of the effects of injuries upon the future prospects of workers based upon investigations made in Massachusetts, California, Wisconsin, New York City, and Denmark. He points out that the period of total disability varies not only with the character of the injury, but also with the age of the worker. The studies show that opportunity for re-employment by the employer in whose plant the injury occurred varies inversely with the severity of the injury, and that opportunity to return to the same occupation is also seriously decreased with the severity of the injury. These facts naturally lead to a third conclusion: that unemployment tends to vary in the same ratio as the seriousness of the injury. Injuries, on the whole, tend to force the skilled worker into a less skilled type of work. Although full statistical material is lacking, it is apparent that inability to speak English decreases the opportunity of the disabled worker to obtain re-employment.

There is a marked tendency for injured workmen to be re-employed at wages less than they were receiving at the time of the injury, though in some cases they receive more. The tendency for wages to decrease varies in the same direction as the severity of the injury.

The writer points out that the injured workman has been handicapped not only by his injury, but by the psychological state arising out of the new condition in which he finds himself, and also the general lack of interest in him both on the part of the employer and of public agencies. To remedy these conditions he suggests: (1) That present compensation laws be made more definite, and that compensation be increased for most injuries; (2) That adequate medical and surgical assistance be furnished by the state; (3) That the state furnish re-education agencies; (4) That it put itself in a position to guarantee re-employment; (5) That more efficient insurance methods be adopted; (6) That the work of supervision of disabled men be centralized in a state office, preferably connected with the industrial accident commission.—C. H. Paull.

WHAT SICK AND CRIPPLED MEN ARE DOING FOR THE FORD MOTOR CO. *N. McLeod.* Mod. Hosp., Jan., 1919, 12, No. 1, 1-3.—The idea of employing sick and crippled men in the Ford Motor Co., did not originate entirely from a philanthropic point of view, but rather because the time is approaching when it will be necessary for all concerns employing large bodies of men to take sick and crippled men and place them where they can be used most efficiently.

A man applying for work is examined by the examining doctor who recommends what kind of work he is physically able to do. If the appli-

cant is not physically fit, he is referred to the medical transfer department, where a detailed description of each job and operation in the entire factory is kept and so classified that it is an easy matter to place the new employee, no matter what his disability may be. Nor are all crippled individuals placed in any one department; each department has its own quota. Tuberculous employees, however, are segregated in two different buildings, built especially for them. These men are divided into different groups, the advanced and the moderately advanced cases, and the nature and amount of work chosen accordingly. Most of the work of the tuberculous employees is in the salvage department.

The Ford Motor Co. by this system is taking men who probably need work more than anyone else, and is making profit from them. It is stated that the system of examining employees and choosing work suited for them has proved an excellent investment. It reduces labor turnover and increases the contentment and efficiency of the employees.—H. A. Bulger.

AN EXPERIMENT IN EMPLOYING THE BLIND. *D. Wolf.* Ind. Management, Feb., 1919, 57, No. 2, 105-107.—A series of circumstances led the Miller Lock Co. to employ a number of blind persons in operating their drilling machines during the war. The training of these workers was begun by familiarizing them with the shape and proportions of the material with which they were to work. They were then given general operating instructions, including changing the drills and care of the machine. Some of the operators were able to become producing men in two days' time, while others required a longer period. A supervisor was assigned to them whose duty it was to look after their general needs, providing them with tools, and guiding them about the building as was required.

Although these blind workers have been successful in operating drilling machines, their average production has not reached that of the normal worker. On the other hand it is hoped that they may eventually attain a higher standard of production. While at first they attracted the attention of their fellow-workers, it has been felt that their presence in the factory has tended to improve the morale of the working force.—C. H. Paull.

MAJOR H. R. ALLEN'S INSTANTANEOUS METHOD OF RESHAPING TOOL HANDLES SO THAT THEY MAY BE USED BY DEFORMED OR CRIPPLED HANDS. *R. W. Shufeldt.* Med. Rec., Feb. 15, 1919, 95, No. 7, 269-273.—Major Shufeldt here describes one of Major Allen's most recent ingenious inventions for the prompt improvement in the use of crippled or deformed hands, and in addition carries the idea a little farther and applies it to artificial hands.

Major Allen has suggested and proved the value of the use of ordinary gelatin and ordinary modelling composition, used by dentists, in making plastic handles for tools and instruments varying widely in their nature. This composition has the property of becoming soft and plastic without running, after several minutes' immersion in hot water. This, when allowed to cool or when plunged into cold water, at once hardens and becomes brittle with the consistency of terra cotta. A mass of this soft mixture is applied to the handle of the tool which is to be used, is moulded to conform to the shape of the palmar surface of the partially closed crippled hand and allowed to harden. It has been shown that with this modified handle the crippled hand can be used with astonishing efficiency.

Major Shufeldt's modification may be applied to artificial arms and consists in making with this composition material a rough model of the hand, which in its plastic condition may be made to hold any tool or instrument desired, and which is then allowed to harden. He has even suggested a single finger for the use of the typewriter. By this means artificial hands may be made infinitely more useful than the artificial hands manufactured at present.—W. H. Alexander.

HOW TO GET "BETTER-THAN-NEW" WORKMEN. *J. Heywood.* Factory, Jan., 1919, 22, No. 1, 40-41.—An introduction of the employer to the work of the Federal Board for Vocational Education.—Charles H. Paull.

PRODUCTIVE OCCUPATIONAL THERAPY IN THE TREATMENT OF THE DISABILITIES OF THE EXTREMITIES. *E. G. Brackett.* Jour. Orthop. Surgery, Jan., 1919, 1, No. 1, 40-45.—The author points out that a long convalescence is often the cause of a man's losing his "industrial grip." This is especially important in the soldier. He makes a plea for productive occupational therapy and gives examples of what it means. For instance, a man with a stiff hand that has to be made more flexible should be given *specially adjusted* carpenter's tools and put to work. The most important point in the whole is the adjustment of the tools and work to the condition. In England some work has been done along this line, and the institutions in which it is carried out have a very encouraging air of hopefulness and a morale that is not approached in most of the old-fashioned ones, showing how well this treatment reacts upon the men.—Charles C. Lund.

A REPORT OF THE CLEVELAND AND ELYRIA CRIPPLE SURVEYS. *W. G. Stern.* Jour. Orthop. Surgery, Jan., 1919, 1, No. 1, 23-32.—This is a short paper on the results of a very thorough survey of the above cities, in a study of the problem of cripples. A very instructive point was that 65 per cent. of cripples in all walks of life were unknown to hospitals, dispensaries or social agencies, and were discovered only on house to house canvass. The ratio of cripples to population was 6:1000. The paper mentions the fact that many were more than self-supporting, but does not show what individuals crippled in different ways did to earn their support. But this and many other important facts could no doubt be learned by reference to the data collected in the survey.—Charles C. Lund.

MISCELLANEOUS

SYSTEMATIC CARE IN THE SEXUAL DISEASES.—*J. B. Clark.* Jour. Am. Med. Assn., April 26, 1919, 72, No. 17, 1205-1211.—A very thorough article on the care of venereal disease in Camp Logan, Tex.—C. K. Drinker.

INDUSTRIAL SLAUGHTER-HOUSES. *Rippert.* Riv. di ingegner. san., 1918, 14, No. 14, 79-81.—In the past the meat industry in European countries has been in a backward state. The municipal abattoirs consist of several buildings, but all are one-story structures and the work is performed on one floor. An industrial slaughter-house is an entirely different establishment. It consists of one building of several stories. The animals are carried to the top floor, where they are killed, and the carcasses are worked up as they pass down through the various floors. While in a municipal abattoir all the various operations are performed by the same men, in an industrial establishment the animal passes from hand to hand, thereby producing a division of labor. It is planned to establish a number of industrial abattoirs in France in the regions where cattle are produced, and to transport the meat in refrigeration cars to the various centers of consumption. It is expected that this system will greatly reduce the price of meat. Another advantage of these industrial abattoirs consists in the fact that the work is performed more cleanly and the general principles of hygiene can be applied more strictly.—Albert Allemann.

DRUG ADDICTION. *W. A. Bloedorn.* Jour. Am. Med. Assn., Jan. 25, 1919, 72, No. 4, 262-265.—A brief general article relating to drug addiction in the navy.—Cecil K. Drinker.

THE PROBLEM OF THE WORKING ABILITY AND THE EARNING CAPACITY OF TUBERCULOUS INDIVIDUALS. *D. Rothschild.* Therap. Monatsh., Oct., 1918, 32, No. 10, 369-380.—Tuberculosis has increased enormously in Germany since the beginning of the war. This is attributed to the fact that at home, as well as the front, under-nutrition and mental and physical strain exist. Furthermore, many individuals, particularly women, have been forced into war occupations entailing heavy and unaccustomed physical labor, frequently in unhygienic surroundings.

Emphasis is laid upon the importance of a careful examination to determine whether a tuberculous person is capable of following some occupational pursuit. The writer is guided mainly in his decision as to the activity of tuberculous lesions by the chest signs, the examination of the sputum and the temperature. Relatively little value is attached to the X-ray and the tuberculin reaction. It is pointed out that it is a mistake to be guided by chest signs alone, since persons with a process involving several lobes may go on working for many years with little embarrassment, whereas a person with practically no signs may run a very bad course.

Stress is laid upon the importance of isolating persons with bacilli in the sputum. It is particularly important to protect children from contact with infectious individuals and it is advisable to separate them from tuberculous parents. Occupations in poorly ventilated, dark rooms or in a dust-laden atmosphere and those necessitating a sitting posture should be avoided by tuberculous persons. Individuals with active lesions should be forbidden to engage in handling or preparing food.—G. B. Wislocki.

AN EXPERIMENT IN FAIR DEALING. Mod. Hosp., Feb., 1919, 12, No. 2, 144-146.—How the Delaware Hospital and neighboring employers co-operate to secure the best treatment for injured employees where the law is inadequate.—H. A. Bulger.

ABSTRACT *of the* LITERATURE

OF

INDUSTRIAL HYGIENE

VOLUME I JULY, 1919 NUMBER 3

CONTENTS

	PAGE
General	33
Systemic Occupational Diseases: Occurrence, Treatment and Prevention	37
Poisonous Hazards and Their Effects: Gases Chemicals, etc	37
Occupational Infectious Diseases: Occurrence, Treatment and Prevention	38
Occurrence and Prevention of Industrial Accidents	39
Industrial Surgery	40
Fatigue and Occupational Neuroses	40
Nutrition and Metabolism	41
Hazards of Compressed Air, Diminished Pressure, Generation and Use of Electricity, and Electrical Welding	41
Women and Children in Industry	41
Industrial Sanitation: Illumination, Ventilation, Heating, Water Supply, Sewage Disposal	42
Medical Dispensaries and Hospitals in Industrial Plants	42
Industrial, Personal, and Community Hygiene: Housing	43
Industrial Investigations and Surveys	43
Industrial Management in Its Health Relations: Special Tests in the Selection of Employees	44
Industrial Health Service and Mutual Benefit Associations	44
Industrial Health Legislation and Court Decisions: Malingering	44
Workmen's Compensation and Insurance	44
Rehabilitation of Disabled Employees	46

GENERAL

INDUSTRIAL HYGIENE. *L. I. Harris.* Med. Officer, 1919, 21, No. 2, 13.—Industrial hygiene is closely related to child hygiene. Yet when children leave school and enter the workshops the health authorities lose sight of them. Industrial hygiene is an essential feature of public health work and it is the duty of the health authority to watch over children at work and to examine closely the conditions under which they work.

The author of this article, who is a member of the New York Department of Health, has found a large amount of latent disease among the industrial population of the city. The number of cases of disability due to industrial accidents and disease equal those due to war. The number of accidents occurring to industrial workers in the United States during the year 1918 amounts to no less than 1,900,000, and over 22,000 deaths are directly attributable to industrial accidents.

In New York occupational clinics have been established in the various factories. The health officers not only carry on their studies in industrial hygiene but educate the workers to protect themselves better. The old methods of tuberculosis work must be changed. The tuberculosis clinics must become diagnostic stations for the discovery of occupational diseases of all kinds. These clinics must displace those so-called philanthropic institutions which charge from $5 to $25 for an examination. This work must be done at the cost of the community, not only for the poor but also for those of the middle class who cannot afford to pay.—A. Allemann.

INDUSTRIAL HYGIENE AT THE CONVENTION OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

U. S. Bur. Labor Statis., Month. Labor Rev., Feb., 1919, 8, No. 2, 215-219.—A brief account of important speeches.—C. H. Paull.

CONGRESS SHOULD ADEQUATELY SUPPORT INDUSTRIAL HYGIENE. New York Med. Jour., April 5, 1919, 19, No. 14, 599.—This is an editorial discussing the value of the work done by the U. S. Public Health Service.—W. Herman.

COST OF HEALTH SUPERVISION IN INDUSTRY. *M. W. Alexander.* Mod. Hosp., May, 1919, 12, No. 5, 376-377.

COST OF HEALTH SUPERVISION IN VARIOUS INDUSTRIES

Industry	Number of Establishments Represented	Total Average Number of Employees Supervised	Total Cases of All Kinds	Total Medical and Surgical Cost	Average Annual Cost of Medical and Surgical Supervision per Employee
Metal trades	47	294,646	1,988,991	$541,771	$1.84
Rolling mills	7	49,317	358,574	137,047	2.78
Smelting and refining	1	1,270	2,832	6,932	5.46
Light and power	7	24,921	49,046	92,601	3.72
Transportation	5	35,795	81,591	69,633	1.95
Chemicals	6	10,572	78,744	34,797	3.29
Food	5	13,650	69,565	39,875	2.92
Rubber	5	27,462	234,069	76,089	2.77
Textiles	4	8,939	67,380	24,177	2.70
Paint	2	4,023	10,255	29,635	7.37
Leather	2	3,026	9,440	6,102	2.02
Publishing	2	3,358	6,742	3,473	1.03
Coal mining	1	2,454	2,842	4,637	1.89
Gold mining	1	2,500	62,126	35,590	14.24*
Coal and iron mining	1	11,000	131,898	130,000	11.82*
Miscellaneous	3	2,611	11,019	6,126	2.35
	99	495,544	3,165,114	$1,238,485	$2.50†

*Cost includes treatment for sickness of employees and their families when requested.
†The average annual cost per employee, excluding plants for which the cost includes sickness treatment of employees and their families at home, was $2.21.

This table summarizes data for the year 1916, and supplements the author's compilation for 1915. The average cost of $2.50 is not representative since the total cost on which the average is based includes that of four plants which render unusual service, giving both medical and surgical attention to their employees at the plant and in their homes as well, besides assuming the medical care of the employees' families. Omitting these four plants from consideration, the average cost becomes $2.21 for each individual.

Convincing proof of the economic value of health supervision in industry is afforded by the fact that, when collecting the data contained in this report, it was found that no employer had abandoned the health supervision activities established in his plant. On the contrary, the prevailing tendency has been to invest even more money in extending the service.—C. K. Drinker.

THE CARE OF THE SICK IN THE UNITED STATES IN 1919. *S. S. Goldwater.* Mod. Med., May, 1919, 1, No. 1, 5-12.—This article presents a review of the methods now in operation for the care of the sick in the United States. Certain statistics of industrial interest are given.

1. There is an average of six to ten days of acute illness for each worker in a modern industrial population in one year. On the ten-day basis this would mean that in New York City there are 150,000 sick daily.

2. Various studies have shown averages from 21 per cent. to 40 per cent. of uncared-for illness in industrial communities. In a medical examination drive in South Framingham 77 per cent. of 4,489 persons examined showed some physical disorder or defect requiring medical attention. Self-diagnosis and self-treatment by means of patent medicines is very extensive and not far removed from sheer neglect of sickness. This type of abuse grows better but probably can never be completely eradicated.

3. The character of medical attendance varies with the surroundings of the patient. Where dispensaries are available they are increasingly popular. In New York City 3,468,190 visits were paid by patients to dispensaries in 1915.

Other subjects treated are Lodge and Benefit Fund Practice, State Care, Nursing Care, Public Health Agencies, and Hospitals. Unfortunately space does not permit thorough discussion upon Cost of Medical Care and Industrial Accidents.—Katherine R. Drinker.

THE INTERPRETATION OF THE DEATH RATE BY CLIMOGRAPHS. *E. Huntington.* Mod. Med., May, 1919, 1, No. 1, 13-22.—Data are presented which lead the author to the following conclusions:

1. Fairly moist weather is almost invariably more healthful than dry weather of the same temperature, and by inference moist climates are cor-

respondingly better than dry. A mean temperature of 64 F. is apparently most conducive to physical efficiency.

2. Cold waves, unless of extraordinary severity, are distinctly beneficial to health, while a rise of temperature even in winter is harmful. In considering this conclusion a careful distinction must be made between the effects of a drop in temperature, i.e., the wave itself, and a continuance of a low temperature. Continued cold leads to increased morbidity.

3. A variable climate is in general much more healthy than a uniform climate even though the latter has an almost ideal temperature.—Katherine R. Drinker.

MODERN INDUSTRIAL MEDICINE. *C. D. Selby.* Mod. Med., May, 1919, 1, No. 1, 34-38.—A well constructed article outlining the duties and opportunities of the industrial physician. The following headings are covered without detail:

A. Selection and Assignment of Workers.
   1. Standardization of Job Requirements.
   2. Physical Examination of Workers.
   3. Vocational Placement of Workers.
   4. Instruction of New and Transferred Workers.
B. Hygienic Supervision of Working Conditions.
   1. Inspections.
   2. Investigations.
   3. Instruction of Foremen and Management.
C. Health Maintenance.
   1. Health Instruction.
   2. Provision and Facilities for Care of Health in the Plants.
   3. Prevention of Communicable Diseases.
   4. Treatment of Trivial Injuries.
   5. Prophylactic and Emergency Dental Attention.
   6. Surgical Treatment.
D. Better Home and Community Conditions.
   1. Social Aid.
   2. Medical Aid.
   3. Community Aid.
E. Enhancement of Knowledge.

—Katherine R. Drinker.

HUMANIZING INDUSTRY. *I. Fisher.* Ann. Am. Acad. Pol. Sc., March, 1919, 82, No. 171, 83-90.—Pages 84 to 86 of this discussion deal with the effect of health on production and morale in industry. "Health is the workers' capital." Unlike the man with financial resources, the worker often has little or nothing to fall back upon when he is not able to work. Not only should he have physical health, but also mental health, and this is dependent upon the workers' ability to satisfy certain fundamental instincts such as self-expression, loyalty, play, etc.—C. H. Paull.

HEALTH CONDITIONS IN SOUTHERN EUROPE. *L. Dublin.* Survey, April 5, 1919, 36-38.—Health conditions in southern Europe have become markedly bad during the war. Even prior to the war countries included in this district made inadequate provision for the protection of health. Influenza, tuberculosis, and malaria have made ravages in Italy. Greece has suffered seriously. Serbia has not only been wasted by epidemic, but the birth-rate has been so reduced that the absence of young children is marked. The writer emphasized the need of an immediate organization of effective health work in these countries.—C. H. Paull.

HOSPITAL SERVICE IN RURAL COMMUNITIES. *E. C. Meyer.* Jour. Am. Med. Assn., May 3, 1919, 72, No. 18, 1290-1293.—In 1910, the United States had three times as many physicians in proportion to the total population as the most favored nation in Europe. During the early life of a country with scattered population large numbers of physicians are needed, but as the population becomes more dense the necessity for the same proportionate number of physicians decreases. In 1904 there were 5,747 graduates from our medical schools, in 1918 but 2,807, a decrease directly referable to improvement in standards. Even in spite of this, in 1918 there was more than twice the number of physicians in this country than in the most favored countries of Europe. There has been justifiable dissatisfaction with the quality of medical service, but this should give way rapidly as the better educated young men reach practice.

The cities average better and more medical service than the country, and different sections of the United States are supplied in a very varied manner.

"The rural South has the poorest medical service. The states of the Mountain and Pacific divisions come next, with the middle Atlantic states, New York, New Jersey and Pennsylvania, fourth.

"What the rural regions appear to need most is not a greater number of physicians, but more wise and extensive use of the medical facilities which both country and city at present offer. . . . The development of efficient public health administration, better distribution in certain areas of private practicing physicians, harmonious cooperation between public and private health service, and intelligent demand for medical service—these are the things toward which the open country must strive."

Statistics then follow on the adequacy of medical care in 13,132 cases covered by the surveys of the Metropolitan Life Insurance Company. While it is hard to collect such figures, the results gained indicate a shocking inadequacy in both hospital and private practice. The results in the former case are of considerable interest industrially since the "inadequacy" seems to be due to lack of social service and follow-up work.—C. K. Drinker.

HOSPITAL SERVICE IN RURAL COMMUNITIES. *E. C. Meyer.* Jour. Am. Med. Assn., May 10, 1919, 72, No. 19, 1365-1367.—Lists in a brief, general way the services a rural hospital may render the community.—C. K. Drinker.

HOSPITAL SERVICE IN RURAL COMMUNITIES. *E. C. Meyer.* Jour. Am. Med. Assn., May 17, 1919, 72, No. 20, 1460-1463.—Part IV of Mr. Meyer's review contains a summary of laws making rural hospital compulsory or optional, and terminates by giving the technique of a survey by which information might be gained leading to legislative or community action toward the establishment of efficient rural hospitals.—C. K. Drinker.

THE SANKEY REPORT. Nation, May 3, 1919, 118, No. 2809, Sect. II.—A report of the British Coal Industry Commission, giving the recommendations accepted by the government as to hours and wages, nationalization, etc.—Hazel Andrews.

LABOR CONDITIONS. State Conn., Bur. Labor Statis., 28th Report for the Two Years Ending Nov. 30, 1918, 29-39.—A brief description of conditions during the war, and since the signing of the armistice. A table is appended "showing the wages of outside labor in a number of the larger places in the state."—Hazel Andrews.

OCCUPATIONAL DISEASES. State Conn., Bur. Labor Statis., 28th Report for the Two Years Ending Nov. 30, 1918, 28.—"A summary of the number of cases and the nature of the diseases." Six localities reported. The significant feature is the large number of cases of fulminate rash centering in Bridgeport.—Hazel Andrews.

SIXTH ANNUAL REPORT, STATE OF TENN., DEPT. OF WORKSHOP AND FACTORY INSPECTION, Jan. 1, 1918, to Dec. 31, 1918:

Changes in Method.—New methods of reporting accidents, and issuing working certificates to minors are given. Advances are reported in the matter of safety.

General Work of the Department.—Tables are printed under this head giving the actual official records referring to the inspections made. The new form for the general report is reproduced.

Women Labor in Tennessee.—The state laws governing female employment are stated, and a statistical report of inspections for female labor is given. Photographic illustrations of model factory conditions for girls are shown. The employment of women in war industries is described.

Regulation of Child Labor.—A digest of the child labor laws with the report of inspections for child labor.

Treatment of Industrial Hazards.—A digest of the accident prevention laws of Tennessee is given. Industrial accidents and their prevention are given special treatment. A large number of photographs are reproduced showing methods of safeguarding machinery. There are special sections on workingmen's compensation, fire protection, sanitation, septic tank system of sewage disposal, ventilation, foundry bath law, and regulation of the mattress business.—Hazel Andrews.

TENTH ANNUAL REPORT OF THE COMMISSION OF AGRICULTURE, COMMERCE AND INDUSTRIES OF THE STATE OF SOUTH CAROLINA. 1918. Labor Division, Factory and Inspection and Manufacturing Statistics. *W. D. Holland* and *G. H. Lucas.*—This report deals principally with manufacturing conditions, but considerable mention is made of the administration of the laws regarding child labor and the employment of women. Sanitary conditions as they exist in certain industries, especially in the mills, are discussed in some detail.—Hazel Andrews.

NARCOTIC DRUG ADDICTION AS REGULATED BY A STATE DEPARTMENT OF HEALTH. *T. S. Blair.* Jour. Am. Med. Assn., May 17, 1919, 72, No. 20, 1441-1445.—By an act of the Pennsylvania General Assembly, session of 1917, concurrently with the United States Congress, the Harrison Narcotic Law, to all intents and purposes, was placed on the statute books of the commonwealth. The Commissioner of Health was authorized to establish, in the Department of Health, a bureau or division for the purpose of enforcing the provisions of the act, to require reports to the bureau, and, under the powers conferred on him, to issue rulings and orders necessary for enforcement. The result has been a considerable accumulation of facts on drug addiction which have obvious industrial applications.

1. The larger number of bad reports on drug addiction came from communities with 3000-30,000 population, there being more unrestrained addiction in such places than in the large cities.

2. Prescriptions from physicians constitute the main source of supply. Smuggling and forging of prescriptions constitute other important sources.

3. Codein, morphine, various preparations of opium, and lastly heroin are the narcotic drugs most frequently prescribed, and are arranged in order of frequency. Paregoric, being exempt under the Harrison Law, has become extraordinarily popular.

4. The greater proportion of the worst medical violators of the narcotic laws are men past 50 years. "Empiricism largely accounts for the aged addict and the aged medical offender against the narcotic laws."

5. The best results seen in treatment have been in prisons, for obvious reasons. The gradual reduction method appears to be a failure.

6. Despite plentiful warnings, heroin seems to be displacing codein as a cough sedative, and largely because it costs less. With the rapid growth of the heroin habit before us we should insist that the manufacture of this drug be entirely suppressed.

7. The author believes that there should be a government monopoly on all narcotic drugs with an official in every district absolutely regulating the supply.—C. K. Drinker.

THE DRUG EVIL AND THE DRUG LAW. *C. F. Collins.* N. Y. City, Dept. of Health, Month. Bull., Jan., 1919, 9, No. 1, 1-24.—A discussion by Cornelius F. Collins, Justice, Court of Special Sessions, City of New York, of the drug evil and of the "Narcotic Drug Law" of the State of New York.—Katherine R. Drinker.

THE DEPARTMENT OF HEALTH'S CLINIC FOR DRUG ADDICTS. N. Y. City, Weekly Bull., Dept. of Health, April 19, 1919, N. S. 8, No. 16, 121-122.—A clinic has been established by the Commissioner of Health, known as the Narcotic Relief Station, wherein addicts may secure free treatment.—Hazel Andrews.

STATISTICS OF THE NARCOTIC RELIEF STATION. N. Y. City, Weekly Bull., Dept. of Health, May 3, 1919, N. S. 8, No. 18, 137-139.—"The occupation of the various addicts, as given, shows that 44 per cent. (624) were skilled; and that the work of 236 (17 per cent. of the total) of these was connected with transportation." Detailed statistics as to drug used, race, age, sex, occupation, causes for taking drug, duration of addiction are given.—Hazel Andrews.

EDUCATION OF THE WORKMEN IN SLAUGHTER-HOUSES TO CLEANLINESS. *K. Lohoff.* Ztschr. f. Fleisch- u. Milchyg., 1918, 28, No. 18, 244-246.—It is the duty of the meat inspectors in municipal slaughter-houses to educate the men to cleanliness. This should not be done in an obtrusive manner, but in occasional quiet talks to the men. They should be impressed with the following facts: Danger of infecting the meat through uncleanliness; importance of keeping the tools always clean; avoidance of cutting into encapsulated infection foci; avoidance of soiling the meat by intestinal contents. Diseased organs should never be brought in contact with sound meat. The men should not smoke, as the cigar coming in contact with diseased meat may infect a man's own mouth. Flowing water in all slaughter-houses is essential, so that the hands and tools can be washed at any moment.—A. Allemann.

"CLEANLINESS IS AKIN—." *D. W. Moore.* System, Mar., 1919, 35, No. 3, 501-502.—A brief statement of the Holley Carbureter Co. of the value of cleanliness in the workshop in attracting high-class workmen.—C. H. Paull.

AN APPARATUS FOR THE AUTOMATIC ESTIMATION OF SMALL AMOUNTS OF OXYGEN IN COMBUSTIBLE GAS MIXTURES OR OF COMBUSTIBLE GASES IN AIR. *H. C. Greenwood* and *A. T. S. Zealley.* J. Soc. Chem. Indust., Apr. 15, 1919, 38, No. 7, 87-90.—An automatic device for the detection and estimation of combustible gases (hydrogen, methane, etc.) in air, of oxygen in hydrogen, etc., depending upon the decrease in volume caused by the glowing of a platinum wire in such mixtures. The amount of contaminating gas present may be determined by direct observation of the decrease in volume; or a continuous record may be made by transmitting the volume change to a column of mercury in which a fine platinum wire is partially immersed, the resistance of the exposed portion of this wire showing the amount of contamination. By means of still another attachment, a bell is made to ring when the per cent. of contaminating material exceeds a predetermined limit.—C. H. Fiske.

AN APPARATUS FOR THE ADMINISTRATION OF GASES AND VAPORS TO ANIMALS *E. K. Marshall, Jr.* and *A. C. Kolls.* Jour. Pharmacol. and Exper. Therap., Mar., 1919, 12, No. 8, 385-391.—An apparatus, based on one used by Lehmann, is described for studying the effects of measured amounts of gases and vapors upon animals. The apparatus of Marshall and Kolls is said to be somewhat simpler and more convenient, as well as more generally applicable than Lehmann's apparatus.—W. Hale.

MEDICAL SCHOOL INSPECTION. N. Y. City, Dept. of Health, Weekly Bull., Jan. 4, 1919, N. S. 8, No. 1, 1-3.—This article contains the statistics of the results of medical school inspection in New York City during the years 1913-1917, inclusive.—Katherine R. Drinker.

SYSTEMIC OCCUPATIONAL DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

CIRCULATION

TESTS OF THE FUNCTIONAL CAPACITY OF THE CIRCULATION. *M. H. Kahn.* Am. Jour. Med. Sc., May, 1919, 157, No. 5, 634.—This article gives some data on comparative functional tests in normal individuals and in individuals with neurocirculatory asthenia and allied conditions. To appreciate the article one must see the diagrams and charts presented. The use of these methods may be of value in testing the efficiency of certain individuals.—G. B. Minot.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

INDUSTRIAL POISONING IN AMERICAN ANILIN DYE MANUFACTURE. *Alice Hamilton.* U. S. Bur. Labor Statis., Month. Labor Rev., Feb., 1919, 8, No. 2, 199-215.—A brief summary of a very difficult and important field of industrial toxicology. Readers requiring fuller details are referred to an article by Dr. Hamilton scheduled to appear in the September, 1919, number of *The Journal of Industrial Hygiene.*

A short account of the known causes of dye toxicity is followed by a summary of manufacturing methods. Then follow nine pages giving the physiological action of the principal dyes and dangerous substances used in their manufacture. The compounds covered are: Anilin, benzene, paranitranilin, metanitranilin, dimethylanilin, diethylanilin, anilin chloride, mononitrobenzene, dinitrobenzene, dinitrochlorbenzene, the nitrophenols, benzyl chloride, phosgene, dimethyl sulphate, and sulphuretted hydrogen.—C. K. Drinker.

THE ACTION OF BENZOL. V. THE DIPHASIC LEUCOPENIA AS A POLYNUCLEAR AMPHOPHILE PHENOMENON (RABBIT). *H G Weiskotten* and *H. S. Steensland.* Jour. Med. Research, Mar., 1919, N. S. 34, No. 4, 485-494.—This paper is the fifth of a series of papers upon the action of benzol on the blood in rabbits. The diphasic character of the leucopenia following subcutaneous injections of olive oil-benzol mixture in rabbits is mainly a polynuclear amphophile phenomenon and is only to the extent of about one-sixth, a small mononuclear phenomenon.—G. B. Minot.

CARBON MONOXIDE POISONING. *A. J. Lanza.* Mod. Med., May, 1919, 1, No. 1, 45-46.—A brief

statement of the effects of carbon monoxide. Presents no new facts.—C. K. Drinker.

A SYMPTOM IN ARSENICAL POLYNEURITIS. *R. A. Mees.* Nederl. Tijdschr. v. Geneesk., Feb. 1, 1919, 63d year, 1st half, No. 5, 391-396.—Mees describes the presence of transverse white bands appearing on the finger and toe nails of patients who had taken overdoses of arsenic with suicidal intent. These transverse white bands were 1½ mm. in breadth, had nothing to do with the lunula, the nail above and below being normal, and gradually grew out with the nails. All the finger and toe nails of the patients showed the same phenomenon. The bands on the toe nails were, however, less prominent than those on the fingers, probably on account of shoe pressure. Two of Mees's patients were alcoholic, so that it was difficult to decide whether alcohol or arsenic was the cause of the polyneuritis. The author believes the transverse white bands on the nails, however, to be diagnostic of arsenic.—N. C. Foot.

A CONSIDERATION OF THE PERMEABILITY OF THE INTACT SKIN TO LEAD (A PRELIMINARY COMMUNICATION). *O. Süssman.* München. med. Wchnschr., Dec. 10, 1918, No. 50, 65th year.—Süssman reports four experiments on cats with emphasis on the following points of control:

1. The animals are kept in the personal laboratory of the experimenter for constant observation.

2. The cages are lead free and provided with contrivances for catching and preserving the urine.

3. The greatest possible care is taken that the food and utensils contain no lead.

4. For a week before the actual experiment starts the animals are allowed to become accustomed to the bandages so that they no longer try to free themselves.

5. It is absolutely essential to prevent breaks in the continuity of the skin.

6. The utmost attention is given to the application of the bandage, which is made water and oil tight and consists of gauze, wadding, Billroth batiste, gelatine foil and collodian, and over all a lined covering of oil cloth.

7. The solidity of the bandage is controlled by careful inspection of the outer layers and margins at the end of the experiment.

8. A complete collection and analysis of the feces and urine is made not only during the experiment, but for a short time before.

The application consisted of 10 to 25 gm. of lead oleate well mixed with vaseline, except in one instance, when 5 gm. of lead oxide was made into a salve with cat fat. The skin surface exposed varied from 50 to 150 sq. cm.

The results are tabulated as follows:

Cat. No.	Application	Surface Exposed in Sq. Cm.	Duration of Exposure in Days	Mg. of Recovered Lead					Average Daily Absorption per Dm. of Exposed Skin
				Feces	Urine	Body	Total	Daily Excretion	
1	5 gm. lead oxide, without rubbing	50	17	0.7	0.8	....	1.5	0.09	0.18 mg.
2	10 gm. lead oxide, without rubbing	75	19	1.4	1.1	0.2	2.7	0.14	0.19 mg.
3	20 gm. lead oleate, rubbed in	120	47	2.9	2.2	0.6	5.7	0.12	0.10 mg.
4	25 gm. lead oleate, rubbed in	150	15	1.1	0.7	0.9	2.7	0.18	0.12 mg.

It would seem to the author that poisonous effects could hardly be expected from such a low rate of absorption. Further studies are planned, however, to see if similarly controlled experiments on other animals and with other preparations of lead will yield similar results.—H. F. West.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

SOME OBSERVATIONS ON THE RECENT INFLUENZA EPIDEMIC WITH SPECIAL CONSIDERATION OF ITS COURSE AMONG THE WORKING PEOPLE. *E. Tedeschi.* Riforma med., Jan. 4, 1919, 35, No. 1, 4-6.—The mortality statistics of influenza show that the working classes suffered rather more than the others. Among the workers the thoracic form of the disease prevailed. It is a well known fact in occupational pathology that inhaled dust particles are transported through the lymph current to the peribronchial glands producing enlargement of these organs. The enlargement is usually moderate and is only recognized by means of the X-ray, but in many cases the enlargement is so marked that it gives rise to symptoms of compression and mediastinal phenomena. It is evident that these glands, thus changed by dust particles, become a favorite place for the virus of influenza setting up marked congestive and inflammatory processes.

The female workers suffered more severely from the epidemic than the men. This was especially

noticed among the cigar makers at Sestri Ponente. It is a well known fact that women tobacco workers are especially exposed to disturbances in the genital sphere. Now during the influenza epidemic at Sestri Ponente it was noticed that in pregnant women working in tobacco factories the course of the disease was not only severer but many cases of spontaneous abortion and premature birth were observed.—A. Allemann.

THE PREVENTION OF TUBERCULOSIS IN INDUSTRY. *D. B. Armstrong.* Mod. Med., May, 1919, 1, No. 1, 51-53.—Gives a brief review of the Framingham experience in this regard.

DISTRIBUTION OF TUBERCULOSIS CASES ACCORDING TO AGE GROUP

Groups of Cases During Demonstration	Total, All Ages	16-45 Years	Per Cent. in Industrial Age
Deaths	29	16	55
Cases lost to other communities	32	21	65
Cases under treatment in out-of-town institutions	22	15	68
Cases under treatment at home	159	94	59

Better medical service in industrial establishments will improve these figures, which are in no way unique for industry.—Katherine R. Drinker.

DISABLED IN THE LINE OF DUTY. *G. M. Price.* Survey, March 22, 1919, 889-890.—Dr. Price points out the imperative need for greater facilities for caring for tuberculous soldiers and civilians. He calls attention to the fact that some of the buildings which were constructed for war emergency purposes could well be used as hospitals and sanitoria. Through the activities of the Federal Board of Vocational Education steps are already being taken to provide vocational guidance and training for patients who have satisfactorily completed their medical treatment.—C. H. Paull.

EMPLOYMENT OF PERSONS SUFFERING FROM INFECTIOUS VENEREAL DISEASE. N. Y. City Dept. of Health, Weekly Bull., March 1, 1919, N. S. 8, No. 9, 67.—Attention is called to the provision of the Sanitary Code concerning the employment and examination of those suffering from venereal disease.—Hazel Andrews.

EXTENSION OF THE DEPARTMENT OF HEALTH'S VENEREAL DISEASE WORK. N. Y. City, Weekly Bull., Dept. of Health, April 26, 1919, N. S. 8, No. 17, 129-131.—Ten new clinics for venereal disease have been established, the functions of which are to be chiefly advisory and diagnostic. These clinics will also have preventive and educational functions.—Hazel Andrews.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

REPORT OF A CASE OF STEEL IN THE LARYNX. *F. Allport* and *B. Wilson.* Jour. Am. Med. Assn., May 3, 1919, 72, No. 18, 1285.—A man shearing tie-plate bars in a steel mill was struck in the neck just below the chin by a steel fragment.

Sometime later—the man having had constant difficulty with speech—laryngoscopy revealed an immobility of the left vocal cord and the whole larynx was moderately inflamed. A roentgenogram showed the metal passing apparently through the thyroid cartilage of the larynx. The steel was removed under local anesthesia with entire recovery.—C. K. Drinker.

HAZARDS IN A GARAGE. *C. C. Rausch.* Safety, March-April, 1919, 7, No. 3, 57-72.—Accidents in garages are frequent and often serious in nature. Mr. Rausch considers the various hazards encountered and the avoidance of accidents. Gasoline, air pressure, acetylene, storage battery, oil, repair, washing and fire hazards are discussed.—G. M. Fair.

A GREAT SAFETY SHOW. Bull. N. Y. State Ind. Com., Jan., 1919, 4, No. 4, 62-67.—An account of the recent state Industrial Safety Congress with reports from various bureaus working under the Industrial Commission.—C. H. Paull.

MACHINERY LAY-OUTS. *P. C. Spence.* Bull. N. Y. State Ind. Com., Jan., 1919, 4, No. 4, 68-70.—A discussion of the best methods of locating machinery, belting, etc., so as to reduce accident risk.—C. H. Paull.

TWO-HAND TRIPPING DEVICE FOR PUNCH PRESS. *C. C. Rausch.* Safety, March-April, 1919, 7, No. 3, 72-73.—The two-hand tripping device requires the use of both hands of the machinist simultaneously in operating the starting mechanism. The device illustrated is operated by compressed air.—G. M. Fair.

ON PROTECTING SHAFTING, BELTING AND PULLEYS. Am. Industries, Safety Supplement, April, 1919, 19, No. 9.—C. H. Paull.

SAFETY RULES FOR OXY-ACETYLENE WELDING. Machinery, April, 1919, 25, No. 8, 733-735.—This article contains the rules adopted by the Western Pennsylvania Division of the National Safety Council for all who are engaged in oxy-acetylene welding or cutting operations and for the transportation and care of oxygen and hydrogen tanks.

These rules also cover the necessary devices and fittings on the equipment, the care, operation and handling of oxygen and hydrogen tanks.—R. M. Thomson.

INDUSTRIAL USE AND LIMITATIONS OF RESPIRATORS, GAS MASKS, AND OXYGEN BREATHING APPARATUS. *A. C. Fieldner.* Bull. N. Y. State Ind. Com., March, 1919, 4, No. 6, 109.—This is a brief article on a subject which is treated by the same author in *The Journal of Industrial Hygiene*, June, 1919, Vol. 1, p. 89. Those interested will do well to refer to the latter publication.—C. K. Drinker.

EXTINGUISHING AND PREVENTING OIL AND GAS FIRES. Mech. Engin., May, 1919, 41 No. 5, 436-437.—For the past three years the Bureau of Mines has been conducting investigations to determine the nature and the specific causes of oil and gas fires, with a view of suggesting means whereby they may be successfully combatted, and even eliminated, if possible. In a bulletin recently issued by the Bureau, C. P. Bowie points out what has been done by operators in the past, and describes various fire-prevention methods and fire-fighting apparatus which are being used or adopted by many large oil companies. These methods and apparatus are discussed in detail.—G. M. Fair.

INSTRUCTIONS FOR SAFE USE OF PULVERIZED FUEL. Engineer April 25, 1919, 127, No. 3304, 398-399.—Pulverized coal fuel involves certain elements of danger due to inflammable and explosive properties, as is the case also with oil and gas fuel. In order to insure efficient service and to avoid accidents, therefore it is necessary to provide careful handling by men properly instructed as to the conditions. Since accidents might tend to bring this comparatively modern system of fuel into disrepute, a set of rules and instructions relating to the preparation, storage, and use of pulverized coal has been prepared by the Pulverized Fuel Equipment Co. of New York. The rules are given with some supplementary information from another company.—G. M. Fair.

INDUSTRIAL SURGERY

PRIMARY AND DELAYED PRIMARY SUTURE OF GUNSHOT WOUNDS. *F. Fraser* and *collaborators.* Brit. Jour. Surg., July, 1919, 6, No. 21, 92.—Wide excision of the contaminated tract was not undertaken. Instead a thorough removal of all contaminated or dead tissue was found satisfactory. Careful bacteriological work proved that the one important organism to look for was the hemolytic streptococcus.—C. C. Lund.

PRIMARY SUTURE OF WAR WOUNDS. *R. T. Vaughan.* Surg. Gyn. and Obst. (Internat. Abstract Surg.), April, 1919, 28, No. 4, 281-294.—A careful, collective review of the subject, bringing together the results of all the work in the various armies. A very large bibliography is appended.—C. C. Lund.

A REVERSIBLE AND ADJUSTABLE ELBOW SPLINT. *W. W. Lasher.* Jour. Am. Med. Assn., May 3, 1919, 72, No. 18, 1282.—A simple elbow splint is described, the details of which are readily appreciable in the illustrations accompanying the article.—C. K. Drinker.

ACUTE SEPTIC INFECTIONS OF THE FINGERS. *A Bamberger.* Mod. Med., May, 1919, 1, No. 1, 43-44:

1. Hydrogen peroxide should not be used as a first-aid cleansing measure; the oxygen liberated forces infection into the tissues.

2. Early diagnosis of osteomyelitis and excision of necrotic bone are important.

3. Large incisions are called for in all infections of the fingers.

4. The use of gutta-percha tissue as drainage material instead of gauze is advisable.—Katherine R. Drinker.

THE TREATMENT OF BURNS. *A L McDonald.* Ann. Surg., March, 1919, 69, No. 3, 312-317.—Dr. McDonald concludes from his experiences that the following principles govern treatment:

"In the first-aid care of extensive burns, the dressing with gauze soaked in 10 per cent. or stronger bicarbonate and kept moistened, is the simplest and gives greatest comfort. This is preferable to attempts at a more complicated technic. Morphine should be used to give rest, but must be administered with care, since there is often severe reaction and depression and the drug may do harm. Treatment of shock with posture, heat, hot drinks and stimulants may be necessary.

"Paraffine is much preferable to gauze with oily dressings and should be substituted as soon as possible, at least within thirty-six hours. With use of air pump and atomizer the method can be simplified and rendered quite painless; dressings on gauze should be abandoned.

"Dichloramine T in oil is painful and of slight value. If there is extensive slough, wet dressings or antiseptic powders are preferable.

"The use of adhesive strapping over the raw surface is highly satisfactory and simplifies the treatment since dressings may be extended to two or three days.

"The general condition of the patient must be carefully followed and built up by stimulants, tonics or transfusions.

"Skin grafting is rarely necessary nor does it offer much advantage to the healing with paraffine or adhesive."—H. A. Bulger.

FLAT FEET AND LEG MUSCLE STRAIN RELATED TO INDUSTRY IN CAUSE. *D. V. Baker.* Boston Med. and Surg. Jour., May 15, 1919, 180, No. 20, 554-556.—Baker points out that flat foot and leg muscle strain are very important common sequelae of industrial trauma, and that they cause monetary loss to the workman, a financial loss to the employer, and loss to the insurer.—G. B. Minot.

FATIGUE AND OCCUPATIONAL NEUROSES

FATIGUE IN IRRITABLE HEART AND OTHER CONDITIONS. *J. T. King, Jr.* Arch. Int. Med., April, 1919, 23, No. 4, 527-536.—Among King's conclusions, the following is the most important: The

quantitative estimation of fatigue by the white vasomotor reaction is of value in the study of clinical conditions. Owing to the various sources of possible error in the test, it is more suitable for group study than for individual cases.—G. R. Minot.

FATIGUE DISEASE AS EXEMPLIFIED IN FUNCTIONAL DISORDERS OF THE STOMACH AND THYROID GLAND *J. Rogers.* Arch. Int. Med., April, 1919, 23, No. 4, 498-510.—This article gives a brief discussion of corresponding functional diseases in two apparently unrelated organs, and is intended chiefly to show the probable location of the primary lesion, namely, in the end plates, or terminal filaments of nerves, which have generally been regarded as of negligible importance. He points out that fatigue is to be looked upon as a diseased condition.—G. R. Minot.

NEURASTHENIA A GROWING DISEASE IN ENGINEERING WORK. *C. C. Sherlock.* Engin. N.-Rec., May 8, 1919, 82, No. 19, 918.—Neurasthenia is becoming more and more common in the civil engineering field. Mr. Sherlock discusses the symptoms and the methods of treatment.—G. M. Fair.

NUTRITION AND METABOLISM

CALIBRATION OF A DOCK LABORER BY MEANS OF HIS CO_2 DISCHARGE THE COST OF MECHANICAL WORK IN TERMS OF CO_2 EXPIRED. THE CO_2 ORDINATE OF A DOCK LABORER (TOM KING) DURING SIX DAYS' WORK. (Winter hours, 7.30 A. M. to 12; 1 P. M. to 4.30.) *A. D. Waller,* Proc. Physiol. Soc., Jour. Physiol., March 25, 1919, 52, No. 5, xlviii-l; l-li; lix-lx.—These three communications have to do with the metabolism of men at heavy work, estimated from CO_2 production during brief intervals. A curious increase in oxidation from hour to hour is recorded. Its maximum seems to be reached at the end of the day, when the work, presumably, is least productive. A most interesting comparison is made between the metabolism of a man doing time-work (284 calories per hour) and that of the same man at piece-work of the same kind (430 calories per hour).—P. G. Stiles.

HAZARDS OF COMPRESSED AIR, DIMINISHED PRESSURE, GENERATION AND USE OF ELECTRICITY, AND ELECTRICAL WELDING

THE FALLING SICKNESS OF DIVERS. *A. Bornstein.* Berl. klin. Wchnschr., Dec. 16, 1918, 55th year, No. 50, 1198-1200.—The writer describes a condition occurring in divers, resulting from the use of a tubeless diving apparatus with a rubber suit and rigid helmet. The symptoms arise while the diver is making a rapid, frequently accidental, descent in the water, and consist of the sudden development of dyspnea, sense of pressure about the chest; rapid, shallow respiration; palpitation, congestion of the head and ringing in the ears.

The symptoms are due, according to the writer, to the fact that, while the diver is sinking rapidly, under certain conditions, a low atmospheric pressure develops within the rigid helmet and the head and respiratory tract in consequence are subject for a varying interval to a lower pressure than would correspond to their depth in the water.

The outcome is usually not serious, because pressure equilibrium is quickly restored within the helmet, but deaths are said to have resulted in several instances. The writer was able to produce in himself a similar train of symptoms by diving into an especially constructed tank. By attaching a manometer to the helmet of the diver it was possible for an observer to record the pressures within the helmet during a rapid descent. Malaise was felt whenever the pressure within the helmet fell below that on the outside.—G. B. Wislocki.

WOMEN AND CHILDREN IN INDUSTRY

EMPLOYMENT OF CHILDREN IN AGRICULTURE. Med. Officer, 1919, 21, No. 6, 42.—The Kent Education Committee reports that during 1917, 1805 licenses were granted to boys and 637 to girls to work on farms during the summer months and 762 boys over thirteen were permitted to work in the country also during winter. All the children were examined after their return to school by the medical inspectors. It was found that as a general rule, the children were greatly improved both physically and mentally. Noteworthy was the effect on children of inferior mentality. Boys who had been hopelessly dull were examined six months after re-entering school and they showed a keen mind, great interest and greatly increased power of perception.—A. Allemann.

INDUSTRIAL SANITATION; ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

PRESENT STATUS OF INDUSTRIAL LIGHTING CODES. *G. H. Stickney.* Am. Arch., May 14, 1919, 115, No. 2264, 694-698 (To be continued).—The following abstract of the paper presented before the 349th meeting of the American Institute of Electrical Engineers is given, together with the original paper.

In order to protect workers from accident and eye-strain, industrial lighting codes have been adopted in four states and in federal establishments. Similar action is under consideration in several other states and there is prospect of extension throughout the country.

Investigation and experience indicate the need of government regulation of factory lighting. When adopted by industrial commissions under authority granted by legislatures, the codes become, in effect, state law. Variations in the codes as adopted are less than might appear, some features being experimental. The existing codes correspond in essentials to the Illuminating Engineering Society code, on which they are based.

Mandatory regulations are necessarily limited in function to the assuring of safety. Higher standards are essential for efficient production. Popular education in which electrical and illuminating engineers can co-operate, is an important feature of future development.—G. M. Fair.

COMMON SENSE, SCIENCE AND DRINKING FOUNTAINS. *J. H. Dunlap.* Am. City, May, 1919, 20, No. 5, 470-472.—The need of mouth guards on bubbling fountains, the dangers of the vertical-jet-fountain and the advantages of the slanting-jet-fountain are discussed. "Less art and more common sense" might well be the slogan of a crusade against many types of so-called sanitary drinking fountains now on the market.—G. M. Fair.

DESIGN FEATURES OF SEWAGE DISPOSAL PLANT AT INDUSTRIAL HOUSING DEVELOPMENT OF ALANWOOD IRON AND STEEL CO. AT SWEDELAND, PA. *G. L. Robinson.* Munic. Eng., April, 1919, 56, No. 4, 135-136.—A condensed description of the elements of the disposal plant, consisting of screen chamber, settling tank, syphon chamber, sprinkling filter, sterilizing outfit, and sludge beds.—G. M. Fair.

MEDICAL DISPENSARIES AND HOSPITALS IN INDUSTRIAL PLANTS

INDUSTRIAL MEDICAL AND DENTAL CLINICS IN THE WOMEN'S GARMENT TRADES. *G. M. Price.* Mod. Med., May, 1919, 1, No. 1, 47-50.—This paper describes the operation of the Joint Board of Sanitary Control in the Women's Garment Trades of New York City, which has been in existence for the last six to eight years.

In 1910, at the close of cloak and skirt workers' strike, one of the provisions of settlement created a Joint Board of Sanitary Control, "said board to be empowered to establish standards of sanitary conditions to which the manufacturers and the unions shall be committed and which both sides obligate themselves to maintain to the best of their ability and to the full extent of their powers." In January, 1913, the dress and waist industry was also taken over and the board exercised sanitary control over 75,000 workers, men and women. There was thus brought into existence by the workers themselves and under their control a means for surveying, investigating, establishing standards of safety, sanitation, lighting, ventilation, etc., in over 2700 shops. It became evident very early that hygiene without reference to the individual workers would be inefficacious. As a result many physical examinations have been made and for the last two years the unions have demanded such an examination for admission. This examination is apparently very thorough, both men and women physicians being used.

Special clinics exist for eye, ear, nose, throat, and dental work. In all cases the employees pay for what they receive. Thus during 1918 the dental clinic treated 7,465 patients and had an income of $12,576.73, with a deficit of $292, an average charge of $2.50 being made for each hour's work.

The main significance of these clinics lies, of course, in the fact that they are conducted, financed and managed by the workers themselves for their own benefit.—C. K. Drinker.

SAVINGS TO A MANUFACTURING CONCERN IN A PLANT DISPENSARY. *J. T. Seller.* Mod. Hosp., May, 1919, 12, No. 5, 377.—The Greenfield Tap and Die Corporation, Greenfield, Mass., has employed a trained industrial nurse during the past nine months and has maintained four fully equipped emergency rooms under the supervision of assistant nurses—chosen from individuals in the plant who have shown special aptitude for the work.

The author figures that this health installation has saved his company $1,750 in obviating lost time from accidents, and $2,500 in preventing lost time from disease.

The nurse, employed under the supervision of the employment department, has made numerous home visits.—Katherine R. Drinker.

IT COSTS ONLY $2.32 APIECE TO KEEP WORKERS FIT. Factory, March, 1919, 22, No. 3, 472.—A brief note on the First-Aid Department of the Holtzer-Cabot Electric Co., which reviews the activities of a simple dispensary installation apparently in charge of a nurse, costing $2.32 a year per employee. No mention is made of employment of a physician.—C. K. Drinker.

INDUSTRIAL, PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

THE HOUSING PROBLEM. Med. Officer, 1919, 21, No. 1, 1.—Already before the war there was a great lack of dwellings for workingmen. During the war the overcrowding became still worse, as few new workingmen's dwellings were erected. The Local Government Board is now trying to remedy this condition. On account of the difficulty of securing labor and the high prices of materials, private enterprise cannot be relied upon to undertake this task. Either public utilities societies, local authorities, or the state itself, must solve this problem. State landlordism is not desirable and the public utilities societies in this field are still in an experimental stage. The local authorities must therefore take up this work; they are best fitted for choosing sites, assessing the housing needs and determining the number and kind of houses.—A. Allemann.

BETTER HOUSING—WHAT IT ASKS OF THE PHYSICIAN. *C. C. May.* Mod. Med., May, 1919, 1, No. 1, 70-72.—An appeal for better industrial housing.—C. K. Drinker.

INDUSTRIAL INVESTIGATIONS AND SURVEYS

HOURS OF WORK AS RELATED TO OUTPUT AND HEALTH OF WORKERS. WOOL MANUFACTURING. Nat. Ind. Conference Board, Research Report No. 12, Dec., 1918.—This report covers data gained by the method of questionnaire and by direct investigation of 111 establishments employing 71,595 workers. While it is true that much of the material assembled is of a type obtainable through schedules of inquiry, it is equally true that reliance cannot be placed upon such methods of research for final demonstration of the extremely important facts presented in this report. Unfortunately, there is no separation of data gathered by the questionnaire and data gathered by field investigations and, furthermore, the identity and scientific standing of the field investigators employed is not given. These are omissions not in accord with the most exact type of scientific inquiry.

The hours of work in the wool industry are very uniform. They vary between fifty and sixty hours per week, but 68.4 per cent. of the employees work fifty-four hours; 18.2 per cent. fifty-five hours; 5 per cent. fifty-six hours; and a little over 3 per cent. more than fifty-six hours. Two and seven-tenths per cent. work fifty hours and 2.5 per cent. fifty-three hours.

The most interesting records are found on pages 32-43 of the report. The figures given indicate that under apparently comparable conditions, or as nearly comparable as can be provided in this complex industry, reduction of hours from in the neighborhood of fifty-seven to fifty-four hours per week practically invariably results in a decrease in output. In the entire group only six establishments report a gain in production as a result of shortening hours, and seven report a maintenance of production on the shorter working week. These results have not occurred in the larger and more modern mills upon which the industry depends, but in the smaller and older establishments. It is a matter for regret that the report does not cover in the greatest detail all the conditions surrounding work in a representative mill which has lost in production and in one which has gained, since a more vivid comparison of the data on output could thus be made.

The experience gained seems to justify the conclusion that the reduction to a fifty-four-hour schedule in wool manufacturing, while involving a net loss in output, has not resulted in a heavy burden upon production. The fact that wool manufacturing is largely a machine industry in which the speed of the worker is, in the main, imposed by the rate of the machine, is a factor rendering it very difficult to keep output high with any reduction of hours. This fact, too, renders it impossible to judge from output statistics as to harmful fatigue in workers. Where the rate of the machine regulates output it is clear that shorter hours must spell decreased production. In such instances fatigue must be judged from sickness reports, absenteeism, accident incidence and other correlative sources of information. The fact that there is a relatively high accident incidence in wool working is perhaps of importance in this relation.

When the reader reaches the direct discussion of health in this report on wool manufacturing, he is much disappointed by the character and sparsity of the data presented.

"Of fifty-seven establishments definitely reporting on health conditions, fifty stated that shortening of hours of work had no significant effect; four reported a decided improvement, while three others said that the effect had been good."

These statements are not substantiated by medical facts, but by opinions from union officials and mill representatives. The dust, heat, humidity and vitiated air hazards are mentioned but no exact data are given as to their extent. The most important conclusions relative to health relate to tuberculosis and are taken from the mortality statistics of the census of 1909. These figures bring out a high tuberculosis incidence in wool workers. Unfortunately they are not amplified by any direct medical examinations at the present time. While such examinations could have no statistical relation to reduction of hours, because of lack of directly comparative figures, they would contribute toward establishing the real nature of the steady physical strain of wool manufacturing as it is now carried on. Fortunately we are assured that many wool establishments are now making careful observations of sickness among their employees and a future

report will doubtless furnish accurate information as to present-day conditions.

The relations of anthrax and industrial accidents to the health of wool workers are disposed of briefly, since neither type of hazard is of distinctive importance, though as has been said, accident incidence is rather high.

Viewed as a whole the report is suggestive, and it is to be hoped that the National Industrial Conference Board will consider the work in this light and will make use of the unparalleled facilities at their command for a thorough health survey of wool manufacturing.—David L. Edsall and Cecil K. Drinker.

INDUSTRIAL MANAGEMENT IN ITS HEALTH RELATIONS: SPECIAL TESTS IN THE SELECTION OF EMPLOYEES

A Routine Method of Mental Examinations for Naval Recruits. *L. E. Bisch.* U. S. Nav. Med. Bull., April, 1919, 13, No. 2, 198-228.—The author has devised a method of rapidly classifying recruits, preliminary to more intensive study of those needing it. He insists that each psychological examination must be individual. Tests which do not depend on school knowledge must be stressed. He uses the "Knox Cube," "Digits Backward," and "Healy 'A' Form Board" tests. He has modified the former methods of scoring these tests. He also gives charts showing the results in over 3000 cases.—C. C. Lund.

INDUSTRIAL HEALTH SERVICE AND MUTUAL BENEFIT ASSOCIATIONS

A Program of Health as Applied by the American Pulley Company. *W. A Sawyer.* Mod. Med., May, 1919, 1, No. 1, 39-43.—The plan of this company has involved preliminary physical examination, periodical physical examination, dental care, rest, recreation and dispensary service. The utility of this extensive program is strongly advocated. Comparatively few details as to its manner of conduction are given.—C. K. Drinker.

Industrial Health Protection at the Western Electric Company. *Margaret J. Robinson.* Mod. Hosp., May, 1919, 12, No. 5, 378-379.—A brief general statement of the health administration in the plant of the Western Electric Company, Hawthorne, Ill.

The most valuable feature of the article is the plan of the medical supervision buildings of the company.—Katherine R. Drinker.

INDUSTRIAL HEALTH LEGISLATION AND COURT DECISIONS: MALINGERING

New Regulations Governing Bakeries. Bull. W. Va. State Dept. of Health, April, 1919 6, No. 2, 44.—A copy of the regulations concerning employment, location and cleanliness in bakeries.—Hazel Andrews.

WORKMEN'S COMPENSATION AND INSURANCE

Lacks in Workmen's Compensation. *R. Meeker.* U. S. Bur. Labor Statis., Month. Labor Rev., Feb., 1919, 8 No. 2, 1-11.—The material in this discussion was presented in a paper before the American Association for Labor Legislation, December, 1918. Mr. Meeker calls attention to failures in compensation legislation at the present time: (1) Compensation laws are wholly lacking in ten states and in the District of Columbia; (2) In most instances, existing compensation laws fail to affect certain classes of workers, such as railroad employees and farm and domestic help; (3) They do not make satisfactory provision for medical care, which is of the first importance in that it determines how soon the worker shall become self-supporting again. (4) With few or no exceptions, compensation is insufficient to protect the worker from want. To establish compensation on a firm basis states should eventually organize exclusive public insurance for all employees in the state.—C. H. Paull.

Group Insurance for the Industrial Worker. *E. E. Rice.* Ind. Management, March, 1919, 57, No. 3, 234-236.—Group insurance, according to the writer, should cover more particularly sickness and injuries which are not included in the provisions of state compensation. Payment of claims should be automatic so that workers may not be discouraged by delays. Sickness and accident benefits are usually based upon a per cent. of the wage of the individual or upon the amount which he optionally contributes toward insurance. In most cases the industry furnishes a portion of the cost of insurance or assumes the entire risk. Life insurance on the group plan basis is relatively

inexpensive. Group insurance could well be extended to provide old age pensions. The effect of group insurance upon the worker is considered very satisfactory in that it relieves him of the fear of the consequences of illness and assists him in providing medical care when he is sick that will return him to his work in the shortest possible time.—C. H. Paull.

HEALTH AND OLD AGE INSURANCE IN OHIO. *J. A. Lapp.* Am. Labor Legis. Rev., March 1919, 9, No. 1, 47-58.—The writer, who has been directing the investigations of the Ohio Health and Old Age Insurance Commission points out statistically the need for insurance in that state. He believes that an insurance scheme such as that proposed should be accompanied by preventive measures as far as the state can furnish them. These measures should include prenatal care, and should continue health supervision during the growing period of the child. Provision should also be made for the adult through the study and prevention of contagious diseases, adequate medical care, etc. However, in spite of all these precautions illness cannot be completely eliminated and consequently health insurance must be provided as a part of the return which the state owes the individual for his participation in productive activities. By the same course of reasoning old age insurance should also be provided. Emphasis is placed upon the necessity for a thorough rehabilitation policy which will place the worker back in his regular employment, and thereby save him to society and allow him to retain his full measure of independence. Some of the arguments against health and old age insurance are answered in the last of this discussion.—C. H. Paull.

LEST WE FORGET. A STUDY OF HEALTH INSURANCE IN RELATION TO THE HISTORY OF THE TWO COUNTRIES WHERE IT HAS FOUND MOST FAVOR. *A. F. Downing.* Boston Med. and Surg. Jour., April 17, 1919, 180, No. 16, 433-444.—This paper is an essay on the subject of health insurance.—G. B. Minot.

NEXT STEP IN SOCIAL INSURANCE IN THE UNITED STATES. *S. M. Lindsey.* U. S. Bur. Labor Statis., Month. Labor Rev., Feb., 1919, 8, No. 2, 28-34.—Mr. Lindsey points out that we must continue to develop a policy of social insurance which will be larger in scope than our war risk insurance scheme.—C. H. Paull.

THE NEXT STEPS IN SOCIAL INSURANCE IN THE UNITED STATES. *S. M. Lindsey.* Am. Labor Legis. Rev., March, 1919, 9, No. 1, 107-114.—With our experience in war risk insurance as a logical point of departure, the writer advocates: (1) That the most liberal provision for the conversion of war risk insurance to permanent insurance be made; (2) that this insurance be extended to all employees of the government; (3) that health insurance be developed by governmental agencies until it is available to all citizens as an essential element of health service; (4) that states administer mutual health, accident, invalidity, and old age insurance for all industrial workers and that such insurance shall be compulsory in the cases of workers unable to provide protection for themselves in other ways. The writer points out that such a policy as outlined by him would not take the place of private insurance agencies, but would still leave a large field for them to develop.—C. H. Paull.

CONFLICT OF COMPENSATION ACTS. *C. C. Sherlock.* Machinery, Feb., 1919, 25, No. 6, 524-525.—This article draws the attention of employers who do business in several states to the conflict of Compensation Acts. The author has found that the following general principles apply:

1. The law of the place of injury governs as to the amount of compensation that may be recovered.
2. The compensation acts have no extra-territorial effect as a general rule.
3. The *lex fori* governs as to procedure and manner of recovery.
4. Compensation cannot be recovered in a state which does not have the necessary machinery to enforce the right.—R. M. Thomson.

COMPARISON OF EXPERIENCE UNDER WORKMEN'S COMPENSATION AND EMPLOYERS' LIABILITY SYSTEMS. *C. Hookstadt.* U. S. Bur. Labor Statis., Month. Labor Rev., March, 1919, 8, No. 3, 230-248.—The purpose of this discussion is to bring together existing data relative to the operation of workmen's compensation and employers' liability systems. The writer presents tables and other statistical material which tend to show that employers' liability is wasteful and does not do the employee justice in that he often fails to collect for an injury or else is forced to pay legal fees averaging about 25 per cent. of the money granted. Compensation, on the other hand, if properly established would eliminate the element of chance both in the case of the employer and of the employee.—C. H. Paull.

LIABILITY OF EMPLOYER FOR HOSPITAL, SURGICAL AND MEDICAL AID. *C. C. Sherlock.* Machinery, May, 1919, 25, No. 9, 835-836.—This article is a review of the amount of the aid an employer is obliged to furnish under the workmen's compensation acts. A great deal of uncertainty exists among employers as to just what they are required to do in certain instances. If a workman is injured while performing his work as an employee he is entitled to (1) immediate medical attention, (2) hospital care if necessary, (3) surgical attention. Other points of discussion in this article are: The right of selecting a physician; Amount for which employer is liable; Length of time for which employer is liable; Extent of medical aid liabilities; and Liabilities in the case of an operation.—R. M. Thomson.

WHO SHALL BEAR THE EXTRAORDINARY COMPENSATION COST OF THE TOTAL DISABILITY CAUSED BY SUCCESSIVE INJURIES? *R. M. Little.* Amer. Labor Legis. Rev., March, 1919, 9, No. 1, 141-149.—This discussion points out that both in the case of the war and in the case of the industrial cripple there is danger that employers will hesitate to take the risk of permanent disability and consequent compensation payments as provided in many states. The government, it is pointed out, should assume the extraordinary compensation

cost for recurring injuries to soldiers after their return to civil life. In a similar manner the states could follow the example of Ohio and New York and provide means for relieving the employer of the whole responsibility for total disability in case of second injuries. If the handicapped worker could be made no greater a risk than the normal worker, he should be an asset in many forms of employment since his very handicap would tend to make him a more stable and thoughtful worker.—C. H. Paull.

SHALL THE AMBITIOUS CRIPPLE SUFFER LOSS OF WORKMEN'S COMPENSATION BENEFITS? *C. Hookstadt.* Am. Labor Legis. Rev., March, 1919, 9, No. 1, 137-140.—The writer points out that the greatest fault in state compensation laws at present is the inadequacy of medical service and of compensation provided disabled men. Through lack of careful investigation compensation has, in some cases, not been based upon the severity of the handicap. Compensation benefits, furthermore, have in general failed to take into account such factors as the age and occupation of the employee. It is proposed that these factors be given consideration and that all schemes of compensation carefully avoid provisions whereby the worker will be penalized for returning to work as soon as possible.—C. H. Paull.

REHABILITATION OF DISABLED EMPLOYEES

TRAINING DISABLED MEN FOR SELF-SUPPORT. *D. C. McMurtrie.* Machinery, March, 1919, 25, No. 7, 649-650.—This article outlines briefly three means of reducing the cost of disability: First, accident prevention; second, medical attention to minimize disability; third, salvage of the remaining abilities of the worker through rehabilitation. The first of these has received wide attention from employers and has been encouraged financially by casualty insurance companies and state funds. The value of the other two means, however, has not as yet been appreciated. Their energetic application would effect a tremendous saving to industry. Unlimited adequate medical attention should be an axiom of casualty practice, and should be demanded by both employer and workman. The aim should be to have the employee return to his job, fully recovered, in the shortest possible time. It is well to develop a science of dealing with cripples, but the ideal is to have fewer cripples.

The third method of lessening the cost of disability is rehabilitation or re-education for self-support. Few jobs require all the physical faculties, and in the present-day variety of industrial processes it is possible to find a job in which a man with a given type of disability can function with 100 per cent. efficiency. The process of re-education can be provided best in a special school for crippled men. In short, the first effect should be to prevent injury, the second to minimize its permanent effects, the third—when disability has ensued—to offset its economic consequences. The execution of this program is not only sound, humanitarian practice—it is good business as well.—R. M. Thomson.

REHABILITATION PROBLEMS. *G. M. Price.* Survey, March 29, 1919, 921-922.—A brief statement of some of the points emphasized in the recent international congress of rehabilitation workers held in this country.—C. H. Paull.

REHABILITATION OF INDUSTRIAL CRIPPLES IN MASSACHUSETTS. *V. O. Robertson.* Am. Labor Legis. Rev., March, 1919, 9, No. 1, 126-129.—A statement of some of the policies of the Vocational Training Division of the Massachusetts Industrial Accident Board, emphasizing the importance of treating cases individually.—C. H. Paull.

INDUSTRIAL EXPERIENCE OF HANDICAPPED WORKMEN IN WISCONSIN. *G. P. Hambrecht.* Am. Labor Legis. Rev., March, 1919, 9, No. 1, 117-125.—An account of the policy of the handicapped division of the Milwaukee State Employment Office, giving list of workers placed and classified according to handicaps, and showing type of work secured.—C. H. Paull.

EMPLOYMENT OPPORTUNITIES FOR REHABILITATED MEN IN PENNSYLVANIA. *H. A. Mackey.* Am. Labor Legis. Rev., March, 1919, 9, No. 1, 130-133.—An argument in favor of the social need for offering opportunities of rehabilitation to all, regardless of the cause of the disability.—C. H. Paull.

AN AFTER-CARE CLINIC IN OREGON. *P. H. Douglas.* Am. Labor Legis. Rev., March, 1919, 9, No. 1, 134-136.—An account of the work undertaken in the course organized at Reed College for the training of women as aides in physio-therapy, with suggestions for the care of disabled men.—C. H. Paull.

POSSIBILITIES OF AN INDUSTRIAL CRIPPLE SUSTAINING A SECOND INJURY. *C. Hookstadt.* U. S. Bur. Labor Statis., Month. Labor Rev., March, 1919, 8, No. 3, 79-88.—Through a study of statistical material gathered in Wisconsin the writer concludes that the danger of the industrial cripple being injured a second time is comparatively slight. By the use of the accident frequency rate for the state, he points out that the number of second major disabilities would probably be about one a year. Because of added care in placing disabled workers and because they have fewer members to expose, he suggests that the accident frequency rate would be no greater in their case than for normal workers. An investigation recently made in California tends to bear out these conclusions. The small amount added through second major injuries to compensation cost to the state is consequently negligible. In order that individual employers shall not be overburdened with compensation payments, it is desirable that the state make provision for the payment of a portion of the second disability cost, as is done in Ohio and New York.—C. H. Paull.

ABSTRACT *of the* LITERATURE

OF

INDUSTRIAL HYGIENE

VOLUME I AUGUST, 1919 NUMBER 4

CONTENTS

	PAGE
General	47
Dust Hazards and Their Effects	52
Poisonous Hazards and Their Effects: Gases, Chemicals, etc.	52
Occupational Infectious Diseases: Occurrence, Treatment and Prevention	52
Occurrence and Prevention of Industrial Accidents	54
Industrial Surgery	56
Fatigue and Occupational Neuroses	56
Women and Children in Industry	56
Industrial Sanitation: Illumination, Ventilation, Heating, Water Supply, Sewage Disposal	57
Medical Dispensaries and Hospitals in Industrial Plants	58
Industrial, Personal and Community Hygiene: Housing, etc.	58
Industrial Management in Its Health Relations: Special Tests in the Selection of Employees	59
Industrial Service and Mutual Benefit Associations	60
Industrial Health Legislation and Court Decisions: Malingering	60
Workmen's Compensation and Insurance	61
Rehabilitation of Disabled Employees	62

GENERAL

GREAT BRITAIN, ANN. REP. CHIEF INSPECT. FACTORIES AND WORKSHOPS FOR 1915. Parliamentary Paper, Cd. 8276, 1916, pp. 1-12.—This report deals only with duties which have arisen in connection with the war. In conjunction with the Board of Trade, the Factory Inspectors aided in the movement to supplant men with women in numerous industries. Trade conferences were instituted to consider measures necessary to free as many men as possible for the army and to determine how far men so released could be replaced by other classes of labor. The necessary reorganization of labor in most cases involved temporary suspension of recognized trade rules and customs, and the points to be settled, therefore, were chiefly those relating to the terms and conditions under which such suspension should take place. The operatives asked for guarantees that those who left for the army should have their places kept open for them, that suspension of rules should be regarded as a war emergency only, that there should be a return to former conditions at the end of the war, and that there should be a fair settlement of the wage question affecting employment of women, or rather labor called in to replace men.

Owing to the exigencies created by the war there arose the necessity for granting to munitions plants exemptions from the restrictions of the Factory Acts. These exemptions took the form of General and Special Orders. The General Orders established limits for an industry as a whole, and Special Orders were issued to individual plants to cover particular needs. The General Order for engineering works manufacturing munitions (before modification according

to the recommendations of the Health of Munitions Workers Committee) provides: (1) Overtime, with a limit of five hours per week for women, boys between 14 and 16 years, and girls between 16 and 18 years; and of seven and one-half hours for boys over 16 years and also (in a few cases of special urgency) for women; (2) Day and night shifts for women and boys over 16 years old and in certain cases for boys over 14 years; (3) Eight-hour shifts for women, girls over 16 and boys over 14 years. Sunday labor was found to prove more and more unsatisfactory to all concerned. The aim has been to discourage long periods of overtime work, and to encourage introduction, where possible, of two and three shifts of workers in continuous operations.

The Factory Inspectors had not as yet found that the strain of long hours had caused any serious breakdown among the workers, save in the case of foremen, managers and some of the older workers. The foremen and managers were usually unable to take days off to get relief from accumulated fatigue. In certain cotton mills periodical medical examinations of workers were made a condition for continuance of overtime and power was given to the examining surgeon by consent, to suspend anyone showing undue signs of fatigue.

The effect of increased hours on production is not very clear. The general opinion is that reasonable overtime does yield increased output, though the increase is not in full proportion to the extra hours worked.

The increase in machinery, the longer hours, and the introduction of female labor have raised new problems in safety, ventilation and sanitation which on the whole have been met satisfactorily. A most important effect of the war on factory environment is the great advance in welfare work, in the provision of canteens and messroom accommodations and in arrangements for dealing with cases of sickness and injury. The introduction of female supervisors over women workers is regarded as highly satisfactory.—Barnett Cohen.

DISABLING SICKNESS AMONG THE POPULATION OF SEVEN COTTON-MILL VILLAGES OF SOUTH CAROLINA IN RELATION TO FAMILY INCOME. *Edgar Sydenstricker, G. A. Wheeler* and *Joseph Goldberger*. U. S. Pub. Health Ser., Pub. Health Rep., Nov. 22, 1918, 33, No. 47, 2038-2051.—Illness of relatively long duration, occurring in families of small incomes, even when not millworkers, shows low economic status to be a more important factor in sickness rate than employment in the mills.—Rhea Fuller.

THIRD BIENNIAL REPORT, 1917-1918, BUREAU OF LABOR, STATE OF ARKANSAS.—Child labor employment certificates have been issued in compliance with the rules of the Children's Division of the U. S. Department of Labor. The policy has been to correct violations rather than to punish violators. During the vacation months of 1918, due to the pressure of high cost of living and of epidemics, children between 10 and 14 were permitted to work. This permission held only for three months.

The Minimum Wage and Maximum Hour Law, which applies to all women workers except telephone employees, has been found to be one of the best protective measures.

The boiler inspection department has prevented several boiler explosions.

Statistics are given, showing the number of accidents in the lumber industry. The number of accidents has increased in the coal industry, showing that more drastic laws are needed.—Hazel Andrews.

REPORT OF THE INDUSTRIAL BOARD OF THE STATE OF INDIANA FOR THE YEAR ENDING SEPT. 30, 1918.—Detailed reports from the department of boiler inspection, factories, buildings and workshops are given. The work with women and children during the war is reported.

The report on mines and mining is extended, including a large amount of recommended legislation. A statistical report of accidents and fatalities in all industries is appended, which classifies the accidents according to industry, to the cause of injury, and to the nature of the injury.—Hazel Andrews.

THIRD BIENNIAL REPORT, 1917-1918, DEPARTMENT OF LABOR AND INDUSTRY, STATE OF MONTANA.—The Compensation Law is discussed and certain changes recommended. The Child Labor Law of Montana is shown to be one of the best.

A table is given which is a comparative record of deaths from tuberculosis in Silver Bow County from August, 1907, to August 31, 1918.—Hazel Andrews.

ELEVENTH BIENNIAL REPORT, 1917-1918, STATE OF WASHINGTON, BUREAU OF LABOR.—The labor situation has improved, both as to wages and living conditions. "Eating, sleeping and hospital accommodations have transformed many (logging) camps and a feeling of self-respect has been aroused."

Greater emphasis has been placed on the educational side of the "Safety First" problem. The Industrial Welfare Commission has established minimum wages in many industries and has issued orders for proper sanitary conditions. The same commission has extended the regulations of the federal act as to hours of minors, and has established legal wages for both boys and girls under 18. The eight-hour law for women has been effectively enforced, as is shown by the report on the cases. An investigation of women replacing men in railway and factory occupations has shown that, in general, adequate provision is made for the comfort of the women.—Hazel Andrews.

FOURTEENTH BIENNIAL REPORT, 1917-1918, BUREAU OF LABOR OF WEST VIRGINIA.—The increase in industrial establishments in West Virginia has necessitated the continuous services of two factory inspectors, and even this is not sufficient. It is found that the legislation regarding women in industry is inadequate and that the present Child Labor Law needs revision. Eighty-three factories were found employing children in violation of the law and these children were in-

structed to secure permits before they could continue working.

During 1917, 67,300 employees were inspected and 1,088 orders issued. During 1918, the number of employees was 82,719, and the number of orders, 637.—Hazel Andrews.

FIRST BIENNIAL REPORT, 1917-1918, COMMISSIONER OF LABOR STATISTICS, STATE OF WYOMING. —The report states that the "conditions of labor during the past two years have been very satisfactory and encouraging." Sanitary conditions have improved in all plants.

The fifty-two-hour law for women seems to be working smoothly with but few complaints from employers. Statistics on women's wages are given.—Hazel Andrews.

GUIDE POSTS ON THE ROAD TO HEALTH. *Sara L. Halliday.* Municipal Reference Library, City of New York, April 30, 1919, Special Report No. 3, 7 pp.—A list of popular books upon health and hygiene.—T. J. Putnam.

PREVENTION OF DISEASE AND CARE OF THE SICK. *W. G. Stimpson* and *M. H. Foster.* U. S. Pub. Health Ser., Miscellaneous Publication No. 17, 2nd. edition. Paper, 318 pp., with illustrations. Washington: Government Printing Office, 1919. —This excellent manual is written for the intelligent layman. The description it gives of the commoner diseases and their treatment is as full as it is profitable to make them, without going into technicalities. It contains sections on the Sanitation of Buildings, Transmission of Disease by Insects, Sanitation of Vessels, Camp Sanitation, Personal Hygiene, Childbirth, Care of the Baby, Care of the Sick, and First Aid to the Injured.

Especially commendable are the articles on lighting, heating, and ventilation, on modern types of privies, and on the destruction of insects. The section dealing with specific diseases gives a clear, easily understood account of each, and recommends in each case a simple, conservative treatment. It may be questioned, however, whether a layman would be able easily to make a differential diagnosis from the accounts given; an index of symptoms might be a valuable addition. The division given over to First Aid to the Injured is well arranged and much more complete than most first-aid manuals, going into such matters as the newer methods of sterilization of wounds, and the technique of suturing, ligaturing, applying plaster casts, etc.

This book should be of great value on farms, ships, and under other conditions where professional medical advice is not available.—T. J. Putnam.

NATIONAL PROBLEMS OF MENTAL HEALTH. *H. Y. Delgado.* Revista de psiquiatria, y disciplinas conexas, April, 1919, 1, No. 4, 203-211.—Emphasizes the need now and the favorable opportunity, with the momentum of interest due to the war, to organize efforts to improve mental efficiency and health. There is need of more psychological work in medicine, and attention to the problems of alienation, delinquency, and mental weakness, with reference to public health.—G. E. Partridge.

HEALTH AND OCCUPATION. Jour. Am. Med. Assn., April 26, 1919, 72, No. 17, 1240.—In a letter to the (London) *Times*, Prof. J. S. Haldane corrects the wide-spread mistake as to the dangers to life and health in coal mining as compared with other occupations, and gives a table compiled from the last of the reports on occupational mortality issued by the registrar-general, showing that the mortality in coal mining is below the average for all occupied males of the same age-group. Among coal miners the death rate from accident is about double that in average occupations. Even so, coal mining is a relatively safe occupation. It has become so to a steadily increasing extent during the last forty years. Apart from accidents, it is now one of the most healthful occupations, though it could be made still more healthful, and considerably more safe.—T. J. Putnam.

TWENTY SUGGESTIONS TO INDUSTRIAL PHYSICIANS AND SURGEONS. *C. D. Selby.* Mod. Hosp., June, 1919, 12, No. 6, 455-458.—This article, in its original form, appeared in *Modern Medicine*, May, 1919, 1, No. 1, 34-38, and is abstracted in the JOURNAL OF INDUSTRIAL HYGIENE, July, 1919, 1, No. 3, 35.—K. R. Drinker.

THE PROBLEM OF DRUG-ADDICTION. *Clifford Griffin.* Bull. R. I. State Board of Health, Feb., 1919, 5, No. 1, 22-29.—By a state law passed in April, 1919 (Gen. Laws, Ch. 1674) the care of drug addicts was vested in the state Board of Health. The plan of treatment adopted was one of surveillance, a prescription being given to each addict daily for the day's amount of the drug, which amount was gradually but slowly diminished. One-third of the addicts had no useful occupation. In about one-half the cases, the environment was bad. A fifth of them had not had a grammar school education. The habit was acquired by association in 98 per cent. of the cases. Many of the addicts have been improved, but few have been cured. The aim of treatment should usually be the control of the amount taken, the patient being given finally no more than 5 or 6 grains daily; he is then usually enabled to work and is not at the mercy of peddlers of the drug. Isolation in an institution is practically essential to a cure; an amendment to the present law to permit this is recommended.—T. J. Putnam.

THE NEW SCIENCE OF INDUSTRIAL PHYSIOLOGY. *Frederic S. Lee.* U. S. Pub. Health Ser., Pub. Health Rep., April 11, 1919, 34, No. 15, 723-728. —The relation of the body of the worker to industry has been called "Industrial Physiology." Its two objects are to learn how to secure the largest output and maintain maximum bodily health, and to establish these conditions in the factories. Scientific investigations are being carried on in factories in which the conditions of the workers are varied for experimental purposes, while accurate measurements of output are made. Investigations have shown the following: Fatigue reduces output during successive hours. A shorter working day increases hourly rate of production. Rest periods during a long working day increase output. Overtime and heat impair output also. Night work falls very low in output in

the early morning hours. Women are found to be capable of doing many kinds of industrial work which have heretofore been performed only by men. Accidents, labor turnover, and food and efficiency are important factors. Scientific motion study enables unnecessary motions to be eliminated.

England, France and the United States have made valuable investigations on the above topics. Leading universities in the above countries are also taking up the problem of the human factor in industry.—E. H. Reeves.

THE PSYCHO-PHYSIOLOGICAL FACTOR IN INDUSTRIAL WORK. *I. Ioteyko.* Bulletin de L'Institut genéral psychologique, July-Dec., 1918, 8, No. 46, 166-185.—Most investigators who have studied industrial efficiency have left out the interests of the human factor. Man has been considered too much as a physical motor, and too little as a psycho-physiological apparatus. The problem, instead of being simple, is exceedingly complex, and must be treated analytically. The economic functioning of the organism must be examined from many points of view. Fatigue and expenditure of energy must be measured; the influence of general intelligence on productivity, proper selection of workers, special aptitudes, must be studied. Minimum expenditure of energy must be attained by establishing the conditions that make it possible.

Among already discovered facts and principles are these: The organism can adopt a manner of work that is more or less economical. There is no fixed relation between work and fatigue; more or less energy can be produced during the day according to need. There is a relation between general intelligence and work. Waxweiler's studies show an hierarchy of occupations according to the precision of attention required. There is a relation between general education and capacity for work. Imbert has shown that even in mechanical occupations capacity depends more upon the mental than upon the physical qualities of the man.

The most undeveloped phase of the problem of the psychology of production is its individualistic aspect. Taylor, for example, has taken into account only the general psychology of productivity. He has measured the output of the worker, but not the fatigue, etc., of the worker. The cost in energy in producing a given result must be considered. The intensity of effort varies greatly when the work is prolonged beyond a certain point, provided the quality and quantity of output must be maintained. These psycho-physiological facts must be introduced into questions of wages. The coefficient of increase must be determined experimentally in each occupation. There are many such problems in the field of energetics, as applied to industry. Economic science must enlarge its sphere and become individual, but of course without ceasing to be social.—G. E. Partridge.

PRACTICAL APPLICATIONS OF PSYCHOLOGY AS DEVELOPED BY THE WAR. *G. Stanley Hall.* Pedagogical Seminary, March, 1919, 26, No. 1, 76-89.—Nine-tenths of the energy of the world is absorbed by industry. After the war our great task is to rehumanize industry, to break down the disastrous partition that has grown up between brain-work and hand-work. We must learn how to put both head and heart into industry. The efficiency of the country in war has been vastly increased by what may be called vocational guidance. We must apply the same principles in fitting every man to his work. Differences among individuals in various abilities are very great, and a knowledge of these and of methods of measuring them must be employed. Differences in intelligence are important, but there are also profound differences in type of organization, which are even deeper than differences in race. Psychology must help to create a new spirit in work, which will be far-reaching in its effects upon efficiency, health, and morality.—G. E. Partridge.

EDUCATIONAL DIFFERENCES AMONG TRADESMEN. *H. A. Toops* and *R. Pinter.* Jour. Applied Psychology, March, 1919, 3, No. 1, 33-49.—This is a study of about 1,000 men of various trades, classified as apprentice, journeyman and expert; and of the relation of the education of tradesmen to that of the members of professions and of laborers. It was found that boys having education only up to the third or fourth grade are practically condemned to a life of labor. From a third or fourth grade education, but with less than a seventh, the chances of becoming a journeyman tradesman only are greater than the chances of becoming an expert tradesman. With better than a seventh grade education the chances are greatly in favor of eventually becoming an expert tradesman.—G. E. Partridge.

LAUNCHING PART-TIME CO-OPERATIVE EDUCATION ON A LARGE SCALE. *F. M. Leavitt.* Manual Training Magazine, April, 1919, 20, No. 8, 267-275.—The Pittsburgh plan is described and discussed. Several of the large department stores have entered into a co-operative arrangement with the Carnegie Institute of Technology and the public schools for the study of problems relating to the training of department store employees. The owners of the stores have contributed jointly the sum of $32,000 a year for the work. A first-year high school course has been worked out. The writer believes the plan a step in advance in the direction of reaching the "privates" in a numerous branch of the industrial army.—G. E. Partridge.

EVENING AND PART-TIME SCHOOLS IN THE TEXTILE INDUSTRY OF THE SOUTHERN STATES. Federal Board for Vocational Education, April, 1919, Bulletin No. 30, Trade and Industrial Series No. 5, 106 pp.—The Federal Vocational Education Law (Smith-Hughes Act) provides funds out of the national treasury for co-operation with the several states in promoting vocational training. The conditions under which these funds are available are briefly as follows:

(1) The classes must be under public supervision or control.

(2) The controlling purpose of the instruction must be further to fit employees for useful employment.

(3) The instruction must be less than college grade.

(4) The minimum age for pupils shall be fourteen years for part-time instruction, and sixteen years for evening instruction.

(5) Federal money obtained through state boards shall be used only for the payment of salaries of teachers.

(6) The amount of federal money expended must be equalled by the amount of public funds from the state or local community.

Forms of application and records are given for such schools in the cotton industries, and suggestions are made as to the organization, personnel, hours, and subjects of instruction.—T. J. Putnam.

INDUSTRIAL ARTS IN RECONSTRUCTION. *W. T. Bawden.* School and Society, March 8, 1919, 9, No. 219, 279-284.—The author recommends distinct changes in education: more exact preparation in high schools for occupations, part-time division between schooling and employment, lengthening of school sessions, elective vocational courses, more required industrial arts in the high schools, more handwork in the grades.—G. E. Partridge.

CONTINUATION SCHOOLS IN INDUSTRIAL AREAS. Report of a paper by *Principal Loughborough*, England. Jour. Education, April, 1919, 51, No. 597, p. 228.—It is essential that in these areas a fair proportion of time should be given to vocational studies. A certain amount of physical culture would be desirable, and also broad studies in the elements of citizenship.—G. E. Partridge.

REPORT OF THE COMMITTEE ON VOCATIONAL SUPERVISION. *Ella A. Moore.* Jour. Nat. Education Assn., Jan., 1919, 3, No. 5, 335-337.—In the city of New York about 50,000 children apply each year to begin at 14 the long task of making a living. Similar conditions prevail elsewhere. The work of the committee is to cope with this situation, and to provide vocational guidance and other aid.—G. E. Partridge.

AFTER-SCHOOL CARE OF THE FEEBLE-MINDED. *C. Steinbach.* Jour. Nat. Education Assn., Feb., 1919, 3, No. 8, 399-400.—This article emphasizes the need of definite attention to the more or less mentally deficient, so that they will not be left to adjust themselves to life unaided. The average normal child is competent at 15. The sub-normal must be educated and protected for a longer period.—G. E. Partridge.

PROBLEMS OF INDUSTRIAL READJUSTMENT IN THE UNITED STATES. Nat. Ind. Conference Board Pub., Feb., 1919, Research Report No. 15, 58 pp. —A critical but optimistic review of the available statistics bearing on reconstruction.—T. J. Putnam.

SECOND REPORT OF THE INDUSTRIAL COMMISSION OF COLORADO Dec. 1, 1917, to Dec. 1, 1918. —A report on the administration of the Workmen's Compensation Act, the Industrial Relations Act, the State Compensation Insurance Fund, and the Colorado Minimum Wage Law.—T. J. Putnam.

POSITIVE CONTRIBUTIONS TO SCIENTIFIC MANAGEMENT. *Henry H. Farquhar.* Quart. Jour. Econ., May, 1919, 33, No. 3, 466-504.—This article is a rather abstract discussion of "some of the accomplishments of the science of management in the field of industry during the thirty years or less of its development." There is no statistical material given in support of its statements. It is a purely descriptive article, written from the viewpoint of the economist.

The relation of the length of the working day to output as recognized by Taylor and other advocates of scientific management is briefly described on page 492. "Conditions of Work as Related to the Health and Well-Being of the Worker" is the heading of a three-page section. According to the author, most measures conducive to the well-being of the worker have always been associated with plants which have adopted the Taylor system of management. One finds in such plants "satisfactory conditions as regards accidents, health and sanitation, the speedy and impartial adjustment of grievances, and comfortable working conditions generally. . . . Mutual benefit societies and insurance and retirement funds which were initiated by Mr. Taylor very early in his work . . . are very characteristic of plants following his lead. . . . It is significant that the first 'fatigue study' ever conducted in a really scientific manner, so far as the writer's records show, was performed over thirty years ago by Mr. Taylor as part of his determination of a proper day's work." Wages, labor turnover, industrial democracy, selection, fitting, and training of employees, are other subjects discussed along with the above, under the heading of "The Human Factor."—Linda James.

LABOR ADMINISTRATION IN THE SHIPBUILDING INDUSTRY DURING WAR TIME. *P. H. Douglas* and *F. E. Wolfe.* Jour. Pol. Econ., March, 1919, 27, No. 3, 145-188.—The greater part of this article is a history of the machinery developed to so adjust industrial relations in the shipyards controlled by the U. S. Fleet Corporation that maximum output could be obtained. On pages 180-181, is a description of that part of the corporation which undertook to improve transportation facilities and housing. On page 182, the activities of the "Health and Sanitation Section" established in January, 1918, are mentioned. "The work was a duplication to some extent of that for which the U. S. Public Health Service is fitted, until, by an executive order of the President on July 1, it was made a co-ordinate part of the Public Health Service." The "Safety Engineering Branch" is described on page 183. "The object of all activity has been the prevention of accidents, not merely as a welfare measure, but as a direct contribution to production." In concluding the article, the authors promise a subsequent one which "will treat the functioning of the organizations upon the problems faced in shipbuilding during the war."—Linda James.

DUST HAZARDS AND THEIR EFFECTS

PRELIMINARY REPORT OF THE COMMITTEE ON MORTALITY FROM TUBERCULOSIS IN DUSTY TRADES. U. S. Dept. Labor, Working Conditions Service. Washington: Government Printing Office, 1919, 27 pp.—This report is a description of the excellent organization and methods of the committee. It does not attempt any conclusions upon the subject to be investigated.—T. J. Putnam.

STANDARDS FOR MEASURING THE EFFICIENCY OF EXHAUST SYSTEMS IN POLISHING SHOPS. *C.-E. A. Winslow, L. Greenburg* and *H. C. Angermyer.* U. S. Pub. Health Service, Pub. Health Rep., Mar. 7, 1919, 34, No. 10, 427-449.—Injurious dusts are considered in regard to size and shape. A review and discussion of the dust codes of the few states having these regulations is given. An experiment demonstrates the error in basing a standard on the U-tube reading, as an inlet gives the same static reading restricted as it does with the opening unobstructed. The most satisfactory determination would be in regard to the condition of the air as inhaled by the worker.

The Palmer water spray apparatus was used in the tests by the authors and the manipulation is given in detail from the taking of the sample to the counting and weighing of the dust particles.

Several grinding and polishing shops were studied. Air velocities and U-tube readings were taken. Plans are shown of the exhaust layouts of two of the shops studied.

From the above experiments the following standards are suggested:

Suction head (average) 3 inches, at no point below 2 inches.

Air velocity at intake of exhaust pipe, 2500 feet per minute; minimum 1500 feet per minute.

Five types of exhaust hood were studied:

1. Underneath exhaust—highly efficient.
2. Overhead exhaust.
3. Special curved hood, flared sides.
4. Galvanized steel hood over belt polishers—satisfactory.
5. Ordinary galvanized steel hood—design and upkeep usually poor.

Results show that different processes will have to be given detailed study, as individual and separate standards will necessarily have to be used.—E. H. Reeves.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

TWO CASES OF ALMOST COMPLETE PHOSPHORUS NECROSIS OF THE JAWS. *M. Pinel.* Bulletin médical, Sept. 14, 1918, No. 34, 375-376.—The two patients were both employed in the same fuse factory. The necrosis was in each case extensive, with sinus and sequestrum formation. The sequestra were removed surgically, and both patients recovered.

The author notes that, while all surgeons are agreed that operation is essential in such cases, they differ in regard to the time of election. Some believe that the necrosis is a manifestation of a general intoxication, and that operation before the separation of the sequestrum, unless very radical, does not prevent the extension of the process and may even delay healing. The German school, on the other hand, believes that the general condition is improved by attending to the local process early. The cases in which the early operation is indicated are those in which the patient cannot stand the strain of his disease. The operation should then be a resection in most cases.—T. J. Putnam.

CLINICAL STUDY OF FREQUENCY OF LEAD, TURPENTINE AND BENZINE POISONING IN 402 PAINTERS. Editorial Review of a study made under the direction of *Louis I. Harris,* Director, Bureau of Preventable Disease, New York City, Department of Health, and published in the Archives of Internal Medicine, August, 1918, pp. 129-156. U. S. Bur. Labor Statis., Month. Labor Rev., March, 1919, 8, No. 3, 226-229.—This article gives the résumé of a study of 402 painters doing interior painting and decorating. One hundred and sixty-three, or 40 per cent., showed active lead poisoning. Seventy-two of the 163 active cases also had lead in the urine, while thirty-five had lead in the urine without clinical signs. Forty-eight and seven-tenths per cent. gave evidence of active or latent lead poisoning. Few reach the age of 50 years as active members of this trade "Alcoholic indulgence does not appear to be a marked predisposing factor toward lead poisoning." Remedies suggested are public health measures and personal hygiene, washing of hands, face, and mouth before eating.—E. H. Reeves.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

FIGHTING TUBERCULOSIS IN FRANCE *Frank E. Wing.* Survey, May 3, 1919, 42, No. 5, 177-184.—The writer, who has worked with the Bureau of Tuberculosis and the Rockefeller Commission in their crusade against tuberculosis in France, discusses conditions in France at the outbreak of the war and since, and outlines the work which American agencies have done. He points out that the early conception that army life was of necessity the source of much tuberculosis had very little foundation. The spread of the disease has been due rather to: (1) The development of active tuberculosis in soldiers already infected; (2) the development of a large amount of tuberculosis in German prison camps; (3) the spread of the disease among civilians captured in occu-

pied territory; (4) the spread of the disease among refugees from occupied territory who were distributed in various parts of France. At the outbreak of the war France was not making at all adequate provision for the care and checking of tuberculosis. As a result of the war the country became interested in the tuberculous soldier. This interest has been enlarged to include civilian population largely through the medical and educational work begun by the American Red Cross and the Rockefeller Commission in the fall of 1917. It was found that although the French had an excellent theoretical knowledge of the disease and its treatment, our more extensive experience in the field of nation-wide treatment and education has been of great value. Although the American Red Cross has withdrawn from this work since the signing of the armistice, the Rockefeller Commission is planning to continue its service in France for a term of years.—C. H. Paull.

WITH THE RED CROSS IN ITALY. *Seymour H. Stone.* Survey, May 31, 1919, 42, No. 9, 369-370. —Some comments on the crusade against tuberculosis in Italy.—C. H. Paull.

TUBERCULOSIS FINDINGS IN A CITY SURVEY. *D. B. Armstrong.* Public Health Jour., May, 1919, 10, No. 5, 205-211.—Framingham, Mass., was selected for the health and tuberculosis demonstration, on the ground that it was a typical American industrial community. The main points of the article are as follows:

"1. Twenty-seven cases under care January 1, 1918, increased to 181 cases November 15, 1918. Again, the number of cases reported prior to 1917 averaged 14 annually. In 1917, this number jumped to 59. These figures indicate the large number of cases which have come under observation as a result of the more thorough methods of examination and examination 'drives'.

"2. The consultation service has proved a superior instrument for discovering tuberculous cases.

"3. Though Framingham is a typical industrial community, it is affected with less tuberculosis than the registration area as a whole.

"4. An intensive survey will discover a large number of arrested cases requiring minimum medical observation. A large number of early and arrested cases can work and do well under home treatment.

"5. Framingham figures would indicate that there are a million active, and over two million inactive and arrested cases in the United States.

"6. A study of conditions in Framingham offers an excellent opportunity for the study of the relationship of influenza to tuberculosis."—L. A. Shaw.

VENEREAL DISEASE PUBLICATIONS. U. S. Public Health Ser., Pub. Health Rep., April 25, 1919, 34, No. 17, 842-843.—A list of pamphlets now available for distribution either by the state boards of health, or the Public Health Service.—L. A. Shaw.

PREVALENCE OF VENEREAL DISEASE IN THE COMMUNITY. Weekly Bulletin, Dept. of Health, City of New York, May 24, 1919, 8, No. 21, 161-165.—Interesting tables are given, showing the results of examinations for syphilis and gonorrhea in several groups of individuals in New York City. —T. J. Putnam.

MEDICAL AND SOCIAL ASPECTS OF THE VENEREAL DISEASE PROBLEM. *Gordon Bates.* Pub. Health Jour., May, 1919, 10, No. 5, 193-204.—It is estimated that about 8 per cent. of the Canadian population is syphilitic, and that there is a still greater percentage of cases of gonorrhea, yet Canada is without an organization for attacking this health problem. The Ontario Act is a fairly good piece of legislation, but action rather than legislation is the most urgent need. There should be a vigorous educational program instituted. Standard clinics should be established at strategic points. The whole campaign should come under some form of central control. The developments of venereal disease control, both in and out of the army in the United States, provide an example of what can and should be done to combat venereal diseases. (See "A Year's Progress in Venereal Disease Control," by Gertrude Seymour, Soc. Hyg., Jan., 1919, 5, No. 1, 49-66, abstracted p. 54 of this issue.)—L. A. Shaw.

PUBLIC HEALTH SERVICE PROGRAM FOR NATION-WIDE CONTROL OF VENEREAL DISEASES. *C. C. Pierce.* U. S. Pub. Health Ser., Pub. Health Rep., May 16, 1919, 34, No. 20, 1056-1062.—When the United States first entered the war, the first act of the Public Health Service in the campaign against venereal diseases was to attempt to gain the co-operation of the various state boards of health, for the purpose of securing reports of all venereal infections; for the carrying out of repressive measures, such as detention in hospitals of all active cases; for the establishment of free clinics for treatment; and for general education of the public in regard to venereal diseases.

The Chamberlain-Kahn bill of July 9, 1918, provides that, under certain conditions, the sum of $1,000,000 a year for two years may be allotted to each state desiring it, to be used in the campaign against venereal disease along certain standardized lines. Eighteen states have already passed the necessary laws.

Under Amendment No. 7 to the Interstate Quarantine Regulations, in effect November 19, 1918, all persons infected with venereal diseases must have a permit from the local health officer before traveling or moving from one state to another.

Druggists and private physicians have co-operated with the Public Health Service in a most gratifying manner. All physicians participating in the venereal disease control program are being furnished with copies of the manual of treatment of venereal diseases, first issued to the medical officers of the Army.—T. J. Putnam.

SOCIAL HYGIENE LEGISLATION IN 1917. *Joseph Mayer.* Soc. Hyg., Jan., 1919, 5, No. 1, 67-82.—The past decade has witnessed a remarkable change in the standards of vice control in the United States. Segregation and toleration have been replaced by repression and prevention. A

table is included in this article, covering social hygiene legislation by states, showing the subjects dealt with, the bills introduced, and the laws enacted. Finally, a list of the specific bills summarized in the above table contains a brief statement of the subject matter or purpose of each bill, when the bill became a law, and where it may be found.—L. A. Shaw.

A Year's Progress in Venereal Disease Control. *Gertrude Seymour.* Soc. Hyg., Jan., 1919, 5, No. 1, 49-66.—The following suggestions for state board of health regulations for the prevention of venereal diseases, have been approved by the Surgeons-General of the Army, the Navy, and the Public Health Service:

Venereal diseases are declared dangerous to the public health.

1. Venereal diseases are to be reported.
2. Patients are to be given information.
3. Cases are to be investigated.
4. The protection of others from infection by venereally diseased persons is to be attempted.
5. Under certain conditions, the name of the patient is required to be reported.
6. Druggists are forbidden to prescribe for venereal diseases.
7. The spread of venereal disease is unlawful.
8. Prostitution is to be repressed.
9. Giving certificates of freedom from venereal disease is prohibited.
10. Records are to be kept secret.

These recommendations have been made law in all their essentials in forty-two states. In some states, cases are reported to the local health officer; in others, to the state health officer. Special bureaus in state departments of health have developed facilities for the treatment and education of the public as well as of patients, the creation and supervision of clinic work and for social service work. Furthermore, the Chamberlain-Kahn bill, recently passed by Congress, provides for the creation of a Division of Venereal Diseases in the United States Public Health Service, the function of which will be to co-operate with the individual state boards and to assist them in developing their own programs. Each state is to receive an appropriation from this division, made upon a population basis, on condition that a similar amount is appropriated from the funds of the state board, and subject to the further conditions defined by the Secretary of the Treasury. Each state accepting the co-operation of this division has assigned to it a special officer of the Public Health Service. In addition to the measures requiring money only, such as the establishment of facilities for free diagnosis and treatment, legislative measures are required to provide for the reporting of venereal diseases, to eliminate quacks, to prevent treatment by drug-clerks, etc. —L. A. Shaw.

Effect of Metallic Tin and Tin Oxide in Staphylococcus Infections (Furunculosis). *A. Frouin* and *R. Grégiore.* Comptes rendus, 1917, 164, No. 794; abstracted in Centralbl. f. Bacteriol., Ite. Abt., Referate, Nov., 1918, 67, No. 482.—Following the observation that tin workers never suffer from furuncles, the authors tried the effect of tin, tin oxide, and tin chloride on staphylococci *in vitro,* and upon staphylococcus infections.

On aerobic broth and sugar-broth cultures, the tin compounds exerted no growth-inhibiting effects, but the virulence of the cultures was appreciably diminished. In anaerobic culture a growth-inhibiting effect was also evident. Rabbits, inoculated intraperitoneally with staphylococci, had death delayed four to eight days when injected intravenously with 0.1 gm. tin chloride or hydrate twelve hours after inoculation. Daily feeding of 2 gm. of tin or tin oxide for twenty days caused no disturbance in the dog. On the contrary, animals fed metallic tin gained weight.

Fifty cases of furunculosis were given 0.5-1.0 gm. metallic tin or a mixture of tin and the oxide by mouth. In all cases the furuncles disappeared in 5-14 days. No recurrences were observed in six months. Most of these patients had hitherto been unsuccessfully treated by the customary methods and vaccinations.—Barnett Cohen.

A Brief Review of Indirect Contact Transmission and a Preliminary Report of Corroborative Laboratory Research. *James G. Cummings.* Am. Jour. Pub. Health, June, 1919, 9, No. 6, 414-417.—A report of bacteriological tests upon the hands of carriers of various organisms, upon dishes used by them, and upon various other fomites.—T. J. Putnam.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

The Causation and Prevention of Industrial Accidents. *H. M. Vernon.* Lancet, April 5, 1919, 146, No. 4988, 549-550.—Every year in England 1000 workers (exclusive of miners) are killed in industrial accidents; 100,000 to 200,000 suffer injuries which incapacitate for one week or more; and 200,000 suffer minor injuries.

The accident records in four munition factories were studied. In one factory the accidents occurring during a ten and a twelve-hour day were tabulated. For the men no marked change occurred, but for the women in the twelve-hour day relatively two and a half times as many accidents occurred as in the ten-hour day,—an excess which must have been due entirely to fatigue.

There was a rise of accidents during the morning spell of work, due partly to increasing speed of production, but more largely to carelessness and inattention. The effect of inattention, as well as that of alcohol, was seen in comparing injuries to day and to night workers. The night workers start work with the highest incidence of injury because their diverting experiences occur before they began and so distract their attention at the start, while day workers have their diversions after work which they look forward to with increasing intensity.

Temperature is an important cause of accidents. When the room temperature was 60°-69° F., accidents were at a minimum; at 72°, they were 21 per cent. more numerous than at 67°; and at 77°, 30 per cent. more numerous. There is a similar increase at temperatures below 60°. Likewise, defective artificial illumination is well known as a cause of accidents.

By means of Committees of Safety formed in factories, by installation of safety devices, etc., certain companies have reduced their accidents by as much as 78 and 88 per cent.—J. C. Aub.

RESPONSIBILITY FOR INDUSTRIAL ACCIDENTS. Labor Gazette, April, 1919, 19, No. 4, 490.—A brief editorial comment on the Annual Report of the Factory Inspector for New Brunswick.—Rhea Fuller.

SAFETY STANDARDS FOR USE IN WORKSHOPS AND FACTORIES IN TENNESSEE. Adopted and Issued by the State Department of Workshop and Factory Inspection, Tennessee.—Schedule No. 1: Machinery Safeguarding as applied to Belts and Pulleys. A pamphlet with diagrams of safeguarding devices.

Schedule No. 2: Safeguarding Stairways, Platforms and Floor Openings. This schedule contains diagrams and discussions of safety devices.—Hazel Andrews.

PROCEEDINGS OF THE THIRD INDUSTRIAL SAFETY CONGRESS OF NEW YORK STATE, Syracuse, New York, Dec. 2-5, 1918. Prepared for publication by the Bur. Statis. and Information, N. Y. State. —The proceedings of the third industrial safety congress of New York State contain a number of extremely interesting and valuable papers. Among these are: WOMEN IN INDUSTRY, Eugene B. Patton, Bureau of Labor Statistics and Information, New York Industrial Commission; WOMEN IN INDUSTRY, John Coughlin, President, Central Labor Union of Brooklyn; WHY, WHAT AND HOW TO INSPECT, John J. Whelan, Aetna Life Insurance Company; MAINTENANCE AND REPAIR AND THEIR RELATION TO SAFETY, Chester C. Rausch, Assistant Director, American Museum of Safety; MACHINERY LAYOUTS AND THEIR RELATION TO SAFETY, Peter C. Spence, Mechanical Engineer, New York Industrial Commission; WOMEN IN INDUSTRY, Mary Van Kleeck, Director, Women in Industry Service, United States Department of Labor; ACCIDENT PREVENTION IN INDUSTRY, David S. Beyer, Liberty Mutual Insurance Company; INFECTIONS, THEIR CAUSE AND EFFECT, Dr. L. A. Shoudy, Chief Surgeon, Bethlehem Steel Company; INFECTIONS, Dr. Raphael Lewy, Chief Medical Examiner, New York Industrial Commission; INFECTIONS—THEIR COST IN TIME AND CASH, A. W. Mowbray, Actuary, New York State Insurance Fund; WHO SHOULD BEAR THE COST OF REHABILITATING WORKMEN?, R. M. Little, Director, American Museum of Safety; THE SAFETY SUPERVISOR—BY WHOM SHOULD HE BE CHOSEN; TO WHOM SHOULD HE BE RESPONSIBLE; WHAT AUTHORITY SHOULD HE HAVE?, Chester C. Rausch, Assistant Director of American Museum of Safety.

The above list of papers is suggestive only. The proceedings contain other valuable material which those interested in safety can well afford to read.—C. H. Paull.

HOW TO GIVE ILLUSTRATED LECTURES ON ACCIDENT PREVENTION TO WORKMEN. *Roy S. Bonsib.* U. S. Dept. Labor, Working Conditions Service, Washington, 1919, 13 pp.—This article is subdivided into Foreword, six Sections, and Conclusion.

Foreword: A recent investigation shows that about 88 per cent. of accidents are due to man failure, and not directly chargeable to machinery. It is, therefore, necessary to educate the workmen themselves in the hazards of their respective occupations.

I. How to Begin the Lecture. Two general methods: (1) opening with an anecdote; (2) opening with a startling statement.

II. How to Analyze the Problem. Show the hazards of the occupation, how they can be avoided by safe practices, and, finally, the suffering which accident brings upon the employee. Illustrated lectures are the most effective means of attracting a man's attention, because they appeal to the emotions, and can be understood by all nationalities and every grade of intelligence.

III. How to Illustrate the Lectures. Lectures may be illustrated in three ways: (1) by slides; (2) by films; or (3) by actual demonstrations of safe and unsafe practices.

IV. How to Arrange an Effective Program. Do not present the obvious and familiar facts pertaining to hazards and their causes, but rather appeal to the men's emotions by depicting the affliction which befalls the household of an injured worker.

V. When is the Best Time to Hold Meetings? The evening from 7.30 to 8.00 has the advantage of catching the men in a restful state of mind; lectures given at 12.30 are better attended, however, because men prefer to spend the evening at home.

VI. Where is the Best Place to Hold Meetings? Meetings should be held in some hall centrally located, and never in the plant. Men see enough of the plant during working hours.

Conclusions. Lectures, to be most effective, should be about thirty to forty minutes long, illustrated with pictures, in the dining hall if given at noon, or outside the plant if given in the evening.—L. A. Shaw.

GENERAL SAFETY MEASURES. Am. Industries Supplement, May, 1919, 19, No. 10.—Contains the layout of a general machine shop which provides for both safety and maximum production. —C. H. Paull.

REDUCING ACCIDENT RISKS. Factory, May, 1919, 22, No. 5, 1108-1114.—Under this heading for May are a number of short contributions, including "Learning Who Is Responsible," "What Makes Good Goggles," "How Important Are Guards."—C. H. Paull.

GOGGLES IN SHIPYARDS. *M. K. Haskins.* Safety Engin., March, 1919, 37, No. 3, 129.—A page of testimony in behalf of the use of goggles for riveters, heaters, caulkers, blacksmiths, etc. The

company in question furnishes the goggles free of charge. The eye injuries have been reduced 54 per cent.—C. K. Reiman.

A WARNING TO LOCOMOTIVE CRANE OPERATORS. *Chester C. Rausch.* Safety, 7, No. 4, May, 1919, 103-109.—A discussion of five accidents caused by exceeding the safe working limits of locomotive cranes.—G. M. Fair.

INDUSTRIAL SURGERY

NOTES ON THE TREATMENT OF LOW BACK STRAINS. *Herman W. Marshall.* Boston Med. and Surg. Jour., April 24, 1919, 180, No. 17, 473-475.—The author recommends a low-worn belt cut from a sheet of thin steel, padded with leather, as superior to adhesive strapping or plaster of Paris. It must, of course, be supplemented by rest and physical therapy.—T. J. Putnam.

BACK PAIN IN THE MILITARY SERVICE. *Walter A. Sherwood* and *Merritt L. Jones.* Jour. Am. Med. Assn., May 31, 1919, 72, No. 22, 1599-1604.—The authors group cases of pain in the back as follows:

I. Referred pain:
  A. Aneurysm and mediastinal growths.
  B. Gall-bladder disease, gastric ulcer, etc.
  C. Kidney infections, renal and ureteral calculi and other genito-urinary affections.
  D. Static back.
  E. Prominent abdomen due to deficient musculature, excessive fat, enteroptosis, etc.
II. Functional pain:
  A. Hysteria, malingering, the neuroses and allied conditions.
III. Essential back pain (acute and chronic):
  A. Traumatisms and acute infections.
    1. Sprains, strains, fractures and dislocations.
    2. Perinephritic abscess.
  B. Sacro-iliac conditions.
    1. Infections.
    2. Misplacement.
  C. Sacralization of fifth lumbar vertebra.
  D. Infectious conditions.
    1. Rheumatoid, closely allied to the arthritides in which focal infections may be the cause.
    2. Typhoid.
    3. Tuberculosis.
    4. Syphilis.
    5. Gonorrhea.
    6. Spondylitis deformans, osteo-arthritis, etc.
  E. Congenital malformations.
  F. Curvatures.
    1. End-results of infections.
    2. Rickets.
    3. Postural curves, deficient musculature, etc.
  C. New growths.
    1. Carcinoma.
    2. Sarcoma.
    3. Osteoma, etc.

Details of treatment and diagnosis will be found in the text.—C. K. Drinker.

FATIGUE AND OCCUPATIONAL NEUROSES

REST PERIODS FOR INDUSTRIAL WORKERS. Nat. Ind. Conference Board Pub., Research Report No. 13, January, 1919. 55 pp.—This pamphlet is chiefly an analysis of the answers to a schedule of inquiry sent to 388 employers said to have made experiments with rest periods, and of supplementary interviews. The results are critically compared with the available literature, and are tabulated in the appendix.

The investigation appears to indicate that for certain occupations a short recess in the work spell may be desirable from the standpoint of health, and that it may be made advantageous from the standpoint of production. Rest periods have been found especially advantageous in repetitive tasks, heavy work, and work demanding constant sitting or standing. Among the advantages of regular rest periods are the elimination of time waste by putting a stop to irregular pauses, the improvement of discipline, and the cultivation of regular habits among employees with respect to lunches, water drinking, and the use of toilets. In other occupations, however, the nature of the employment affords such opportunity for relaxation that regular rest periods are not required.

Ten minutes, twice a day, is the most common arrangement of rest periods; but they should be adapted to the work and the workers.—T. J. Putnam.

WOMEN AND CHILDREN IN INDUSTRY

STANDARDS FOR THE EMPLOYMENT OF WOMEN IN INDUSTRY. The Woman in Industry Service, U. S. Dept. Labor, Bull. No. 3, March 1, 1919.—A brief account of the standards recommended by the Department of Labor.—T. J. Putnam.

LABOR LAWS FOR WOMEN IN INDUSTRY IN INDIANA. The Woman in Industry Service, U. S. Dept. Labor, Bull. No. 2, December 31, 1918.—A comparison of the working conditions for women in Indiana with those in other states and abroad.

It is recommended that the number of working hours be restricted to eight, and that means of causing the establishment of proper sanitation and comfort be further studied.—T. J. Putnam.

BUREAU OF WOMEN IN INDUSTRY. *James M. Lynch*, Bulletin N. Y. State Industrial Commission, May, 1919, 4, No. 8, 157.—The law forbidding the employment of women in restaurants more than fifty-four hours a week should be extended to third-class cities, which are at present exempt from it. In one restaurant in Niagara Falls, a third class city, the waitresses work 105 hours a week.—T. J. Putnam.

SUITABLE WORK GARMENTS FOR WOMEN IN INDUSTRY. *A. W. Guthrie*, Safety, May, 1919, 7, No. 4, 89-102.—The influx of women into the industrial world introduces the factor of personal protection by proper wearing apparel. The writer discusses the advisability of special uniforms, the best head-covering, and the protection of eyes, ears, nose, mouth, and throat.

The safety standards of the Industrial Board, Pennsylvania Department of Labor and Industry, relating to shop clothing for women are of interest:

Section (1). *Uniforms*: From the standpoint of safety, efficiency and appearance, women workers in shops should wear uniforms, the style to be determined by the nature of the work performed, and so designed and worn as not to constitute a hazard.

Section (2). *Caps*: All women working in shops around machinery presenting unprotected hazards shall wear caps. These caps shall be of such fabric and design, and worn in such a manner as to eliminate the possibility of the wearer's hair being caught by moving parts of machinery.

Section (3). *Shoes:* In the interests of safety, health, and efficiency, women workers should wear shoes of comfortable size, with medium and low heels.

Section (4). *Approval*: Before shop uniforms are officially adopted by employees they shall be submitted to the Industrial Board with a description of the work to be performed by the wearer.—G. M. Fair.

HEALTH SUPERVISION OF WORKING CHILDREN. *George P. Barth*, American Child, May, 1919, 1, No. 1, 44-47.—While medical inspection of schools is in operation in the large cities throughout the country, child labor laws are concerned only with age and educational qualifications, physical and mental fitness being generally overlooked. Children between the ages of 14 and 15 should work only under permit, and should be subject to an adequate health supervision system. A table which is appended shows that: in five states the officer issuing the permit alone determines physical fitness; in 21 states there are no restrictions; in 11 states the issuing officer may call in a physician in doubtful cases; in 14 states a physician must determine physical fitness.—L. A. Shaw.

THE STATES AND CHILD LABOR. U. S. Dept. Labor, Children's Bureau, April 6, 1919, Children's Year Publication No. 13, Bureau Publication No. 58, 46 pp.—"This pamphlet summarizes briefly the age and hour restrictions placed by the various state laws upon the employment of children under 16 in factories, and the employment of boys in mines. These regulations are of two types—labor laws, fixing minimum age and maximum hours and prohibiting night work, and compulsory school attendance laws, which constitute in effect prohibitions of employment during the hours when they require the attendance of children at school."—T. J. Putnam.

MEDICAL ARGUMENT AGAINST NIGHT WORK ESPECIALLY FOR WOMEN EMPLOYEES. *Emery R. Hayhurst*, Am. Jour. Pub. Health, May, 1919, 9, No. 5, 367-368.—Hayhurst argues against night work, especially for women, since it increases all the factors responsible for chronic fatigue, due to disturbances in normal sleep, rest, recreation, food and amount of strain. The tonic effect of exercise in daylight is lost; recreation loses the incentive and stimulus of association with others; and the shifts necessary from day to night duty and reverse upset normal habits. Night work has been shown in England by the British Health of Munition Workers Committee to be responsible for almost double the number of accidents, especially during the period of lowest vitality from 2 to 6 A. M. German records show a constant increase in the number of cases of illness among night workers over day workers.

The irregularities due to shifting hours are especially harmful to women with menstrual disturbances, and married women have less opportunity to nurse their babies when on night duty. —H. F. Smyth.

INDUSTRIAL SANITATION: ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

PRESENT STATUS OF INDUSTRIAL LIGHTING CODES. Parts II and III. *G. H. Stickney*. Am. Arch., May 28 and June 11, 1919, 115, Nos. 2266 and 2268, 771-772, and 835-836.—(*Part I* abstracted in THE JOURNAL OF INDUSTRIAL HYGIENE, July, 1919, 1, No. 3, 42.)

Part II. The writer considers the establishment of proper limits for the glare which he believes is even more important than the matter of intensity. The distribution of light is discussed in relation to intensity and glare limit specifications. Emergency lighting is treated at length.

Part III. The writer concludes this paper with a discussion of switching and controlling apparatus, and of the enforcement of the regulations of the industrial lighting codes in existence.—G. M. Fair.

SANITATION FOR GOVERNMENT MUNITION PLANTS. Metal Worker, etc., May 30, 1919, 91,

No. 22, 681-682.—This article lists some of the regulations issued by the United States Public Health Service. The regulations were prepared by the Committee on Labor of the Council of National Defence, and relate to ventilation, and washing and toilet facilities.—G. M. Fair.

THE HEATING AND VENTILATION OF WORKSHOPS. Part I. Engineer, May 23, 1919, 127, 504-506.—A description of certain characteristic installations which were brought into use in some works erected during the war. The first installation described is that of the Daimler Company, Ltd., Coventry, England.—G. M. Fair.

WHAT IT PAYS TO KNOW ABOUT FACTORY WATER SUPPLY *Charles L. Hubbard.* Factory, May, 1919, 22, No. 5, 919-923.—This article is a practical discussion of three essential qualities of drinking water in factories: quantity, purity, and temperature. It points out that quantity required depends upon the character of work, conditions of climate and type of drinking fountain. Great care should be taken to see that drinking water is either protected from contamination or that the contamination is removed before the water reaches the worker. Filtration removes solid matter which may be injurious or simply unpleasant. Three methods of sterilizing are suggested to fit different needs: chlorination, treatment with ultra-violet rays, or distillation. Illustrative drawings are given to show both the ice and the refrigerating plant method of cooling. —C. H. Paull.

TRADE-WASTE TREATMENT STUDIES IN WISCONSIN. *E. J. Tully,* Engin. N.-R., June 12, 1919, 82, No. 24, 1167-1168.—The Division of Sanitary Engineering of the Wisconsin State Board of Health has devoted particular attention for some time to the prevention of water pollution by industrial wastes. The aim in selecting the system of treatment has been to combine effectiveness with simplicity of construction, reasonableness in cost, and simplicity of operation, to eliminate technical supervision, and to include recovery or partial recovery of waste products, as this is the ideal solution when feasible. An outline of the work already accomplished and the method of attack is given.—G. M. Fair.

EXHAUST REMOVAL OF PLANING MILL WASTES. Metal Worker, etc., June 6, 1919, 91, No. 23, 714-717.—Discusses the equipment necessary for the removal of sawdust, shavings, chips, and other fine waste from woodworking machinery.—G. M. Fair.

PRIVATE FIRE PROTECTION. Munic. Jour. and Public Works, June 21, 1919, 46, No. 25, 449-451. —Report of the Committee of the American Water Works Association, giving recommendations for procedure in installing and charging for private fire devices.—G. M. Fair.

MEDICAL DISPENSARIES AND HOSPITALS IN INDUSTRIAL PLANTS

KEEPING WORKERS WELL—THE PART THE FACTORY DENTIST PLAYS. *Ralph W. Elliott,* Factory, May, 1919, 22, No. 5, 924-925.—The work of the dental dispensary as outlined from the experience of the National Lamp Works of the General Electric Company includes: first, the relief of pain; second, examination and consultation; third, prophylaxis; fourth, consultation with the medical department; fifth, filling, treating, and extracting. Dr. Elliott points to the necessity of making frequent examinations available to employees. By co-operation between the medical and dental departments, much absence can be eliminated, and employees will accept this service intelligently and with appreciation.—C. H. Paull.

INDUSTRIAL HOSPITAL SERVES WHOLE COMMUNITY. Hospital Management, May, 1919, 7, No. 4, 32.—A brief statement of the establishment of a twelve-bed hospital by the Clark Equipment Company of Buchanan, Michigan, which serves both plant and town.—Katherine R. Drinker.

THE RELATION OF THE HOSPITAL TO THE COMPENSATION INSURANCE COMPANIES. Mod. Hosp., April, 1919, 12, No. 4, 274-296.—Many large industrial plants have established plant dispensaries, but the bulk of industrial accident cases must continue to be handled by public hospitals. The Liberty Mutual Insurance Company of Boston has established surgical departments of its own in important industrial centers. In these dispensaries it has been planned to save all the time possible for the employers and employees. These cases handled by the public hospitals in the routine way result in the loss of many hours of productive time. An important feature of this work is the elimination of waiting in out-patient departments. Many of the minor injuries can be dressed at noon hours.—H. A. Bulger.

INDUSTRIAL PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

RECONSTRUCTION IN GREAT BRITAIN. *Thomas Adams.* Nat. Munic. Rev., March, 1919, 8, No. 2.—In this article the author discusses the problem of housing for the poor and town planning. On page 123—"Decentralization of Industries and Town Planning"—he brings out the tendency of modern industry today to buy rural tracts of land for factory sites, near which it builds its own towns. Particular mention is made of such a site bought by the U. S. Steel Corporation in Ontario. "Town planning, in the judgment of the U. S. Steel Corporation, was the first neces-

sity of its housing scheme." Considerable space is given to government and municipal plans for solving the housing problem.—Linda James.

BETTER HOUSING IN IOWA. Iowa State Board of Health, Bulletin No. 9, Jan.-June, 1919, 4, Nos. 1 and 2, 3-48.—This report treats the question of housing from various angles. There are separate articles on better housing, scope of a state housing law, housing and health, woman's interest in a state housing law, the importance of better housing from the standpoint of the employee and the need of a state law regulating housing. Each of these subjects is discussed by a different writer. The report ends with a statement of the proposed state housing law.—Hazel Andrews.

REPORT OF THE HOUSING COMMITTEE OF THE DOMINION CABINET. Labor Gazette, April, 1919, 19, 4, 447-450.—The Dominion Government has set aside $25,000,000 to be used for the purpose of promoting better housing and building conditions throughout the provinces. In order to accomplish this, the laboring man is to have the opportunity of acquiring his own home at actual cost of the building and land.—Rhea Fuller.

INDUSTRIAL MANAGEMENT IN ITS HEALTH RELATIONS: SPECIAL TESTS IN THE SELECTION OF EMPLOYEES

MENTAL TESTS IN INDUSTRY. *J. Crosby Chapman.* Personnel, March, 1919, 1, No. 3, 1 & 9.—An attempt to help the employment managers find the right man for the right job by means of simple mental tests, similar to those used in the U. S. Army.—Rhea Fuller.

REPORT OF THE PSYCHOLOGY COMMITTEE OF THE NATIONAL RESEARCH COUNCIL. *R. M. Yerkes.* Psychological Rev., March, 1919, 26, No. 2, 83-149.—This is a preliminary report of the services of psychology to the United States Government in the war. Details of the organization of the work are given, and brief reports of the psychological investigations carried on for different branches of the service. The development and application of the methods of examining recruits is of most interest. The results of this psychological examining in the army have, in the opinion of Major Yerkes, two important bearings. Their primary significance is in connection with the development and improvement of methods of mental measurement which are applicable to industrial, educational, military and other practical situations. The most important achievement is the creation of a practical, serviceable, and reasonably reliable method of group examining by which, if necessary, as many as 500 individuals may be examined at one time. The scientific data accumulated constitute the second important result. The effect of this work upon industry, education and upon several other activities will be profound. Complete reports of the psychological work are being prepared and will be published in a series of volumes. These will include a volume presenting the results of the examination of 1,600,000 soldiers.—G. E. Partridge.

SYSTEMATIC STUDY OF THE PERSONALITY IN ESTIMATING ADAPTABILITY. *A. S. Amsden.* Arch. Neurol. and Psychiat., March, 1919, 1, No. 3, 301-312.—A paper giving examples of concise personality studies and showing the value of such studies in neuropsychiatric cases. A well-taken history of this sort may explain the patient's break-down, and point the way to changes in the occupation and environment which would be of therapeutic value.—S. Cobb.

THE PSYCHONEUROTIC TEMPERAMENT AND ITS REACTIONS TO MILITARY SERVICE. *E. F. Ballard.* The Alienist and Neurologist, Jan., 1919, 40, No. 1, 49-55. Reprinted from Journal of Mental Science.—Six varieties of temperament of the class discussed are recognized: hysterical, psychoasthenic, epileptic, paranoiacal, manic-depressive and dementia precox. Quantitative reports are not given, but there are statements about the manifestations of these temperaments under service, and about practical limitations and needs of the various types.—G. E. Partridge.

ARMY PERSONNEL WORK: WITH SOME IMPLICATIONS FOR EDUCATION AND INDUSTRY *W. V. Bingham.* Jour. Applied Psychology, March, 1919, 3, No. 1, 1-12.—Every practical problem of personnel in war, industry, business or education presents at least three phases: study of the work to be performed; inventory of the individual man; placement of the man. Analysis of the work is the most neglected of these at the present time.—G. E. Partridge.

A STANDARDIZED GROUP EXAMINATION OF INTELLIGENCE INDEPENDENT OF LANGUAGE. *E. L. Thorndike.* Jour. Applied Psychology, March, 1919, 3, No. 1, 13-32.—This is a further development of the methods of examination of large groups of persons at one time by a single examiner, such as have been used by the Metropolitan Life Insurance Company, and later in the United States Army. The tests may be obtained from the Bureau of Publications, Teachers' College, Columbia.—G. E. Partridge.

PRINCIPLES UNDERLYING THE CLASSIFICATION OF MEN. *T. L. Kelley.* Jour. Applied Psychology, April, 1919, 3, No. 1, 50-67.—This is an important paper, dealing mathematically with the problem of analysis of capacity. A correlation of 0.875 is found between vocational choice and certain other factors which are not general intelligence. A task analysis should throw light upon what constitutes this large field. Such studies as this indicate both the intricacy and the definite practicability of the problem of adjusting the man to the task.—G. E. Partridge.

THE NEED OF MENTAL EFFICIENCY. *J. M. Keniston.* The Alienist and Neurologist, April, 1919, 40, No. 2, 126-130.—A plea for more adequate recognition of the problems of mental efficiency, and a wide extension of such work as that of the eugenics societies. The goal is the scientific estimation of every individual, making possible higher efficiency and effective mobilization for every public service.—G. E. Partridge.

THE PSYCHOLOGY OF VOCATION. *S. De Sanctis.* Rivista di Psicologia, Jan.-Feb., 1919, 15, No. 1, 30-69.—This is an excellent appreciation and analysis of the problems of vocational psychology, considered as a scientific basis for the work of utilizing the individual to his own advantage and to the advantage of the social group in which he lives. A broad conception of the function of practical psychology is taken, and the author recognizes two somewhat different aspects of vocation, and correspondingly two problems and methods. He speaks of *internal* and *external* vocation. Internal vocation must be determined by individual methods that aim to discover hereditary and other fundamental factors of disposition and attitude. The method here must be intimate. Even the exploration of the subconscious must be resorted to. External vocation is a matter of various abilities and functions that can in part be measured by mass methods; and we have at hand already the well-developed technique of individual psychology. There is frequent reference in the paper to American labors in this field.—G. E. Partridge.

THE FIELD OF THE CLINICAL PSYCHOLOGIST AND THE KIND OF TRAINING NEEDED BY THE PSYCHOLOGICAL EXAMINER. *J. E. W. Wallin.* School and Society, Apr. 19, 1919, 9, No. 225, 463-470.—The fields of applied psychology are now so rapidly being differentiated that common and general preparation is no longer sufficient. The case of the clinical psychologist as a legitimate expert, now well qualified in certain fields of mental diagnosis and the like, is presented.—G. E. Partridge.

INDUSTRIAL SERVICE AND MUTUAL BENEFIT ASSOCIATIONS

MEASUREABLE EFFECTS OF WELFARE WORK IN INDUSTRY. The Playground, Jan., 1919, 12, No. 10, 428-434.—Brief summary of recent efforts: effects of changes in hours and wages, type of work place, sanitation, safety, education and organization, health movement, recreation, education, housing, supervision.—G. E. Partridge.

INDUSTRIAL HEALTH LEGISLATION AND COURT DECISIONS: MALINGERING

LABOR LAWS, REVISION OF 1918. DEPARTMENT OF LABOR AND FACTORY INSPECTION, BUREAU OF LABOR STATISTICS, STATE OF CONNECTICUT.—All the laws relating to labor are here published. Those of special interest in connection with industrial hygiene are concerned with factory inspection, employment of children, employment of women, fire regulations, safety in relation to public service companies, workmen's compensation and employers' and workmen's insurance.—Hazel Andrews.

SIXTEENTH BIENNIAL REPORT, 1917-1918, DEPARTMENTS OF LABOR AND COMPENSATION, STATE OF NEBRASKA.—The Female Labor Law is quoted in full, the main features being the section requiring employers to furnish seats and to post the hours of work. The Child Labor Law is discussed briefly and the Mothers' Pension Law is quoted. The law establishing a Minimum Wage Commission and providing for a minimum wage for women and minors is given. A number of safety-first devices are suggested and the General Factory Inspection Law and the Building Laws are quoted.

Part II of the report deals with the Workmen's Compensation Law.—Hazel Andrews.

THE QUEBEC INDUSTRIAL ESTABLISHMENTS (AMENDMENT) ACT RESPECTING CHILD LABOR. Labor Gazette, April, 1919, 19, 4, 496.—Children under 16 years working in an industrial establishment must have a certificate of study and must produce it when called upon. The form of the certificates, drawn up by the chief inspector, is uniform throughout the province.—Rhea Fuller.

MINIMUM WAGES FOR FEMALE EMPLOYEES IN MANITOBA. Labor Gazette, April, 1919, 19, 4, 470-471.—A brief article containing a table of wages and hours for female employees in Manitoba in the trades of dyeing and cleaning and of hairdressing.—Rhea Fuller.

THE MEDICO-LEGAL PROBLEM OF HYSTERO-TRAUMATISM. *A. Pitres* and *H. Verger.* Rev. de Méd., January, 1919, No. 1, 4-47.—The authors tell of the difficulties of the French law of 1898 on industrial accidents, in regard to invalidity of undetermined duration in cases of traumatic neurosis. They mention Brissaud's work on *Sinistrosis* (malingering) of 1907. Before the war the most satisfactory compromise, usually accepted by the courts, consisted in assessing functional disabilities, supposedly curable, considerably lower than incurable organic lesions.

They speak also of the unfortunate results of the doctrine of "pithiatism," the purely suggestive theory of hysteria, during the war. They criticize its foundations, and deplore its results: coercive treatment, systematic denial of pensions and compensations, not only to the exaggerators and prevaricators, but to the sincere hysterotraumatic patients.

Finally, they indicate the steps to be taken by the pension officers in the examination of hys-

terics, and the determination of the extent of compensation of those uncured after appropriate treatment. The settlement should be as follows:

1. In the cases of real hystero-traumatism: full pension, and compensation corresponding to the degree of invalidity.

2. In case of persistence of symptoms from habit or want of will: temporary pension, and correspondingly reduced compensation.

3. In cases of proved exaggeration: the compensation should be reduced as much as possible. —T. J. Putnam.

WORKMEN'S COMPENSATION AND INSURANCE

COMPENSATION FOR OCCUPATIONAL DISEASES IN THE UNITED STATES AND FOREIGN COUNTRIES. *Carl Hookstadt.* U. S. Bur. Labor Statis., Month. Labor Rev., April, 1919, 8, No. 4, 200-209.—With the exception of certain provisions made in Great Britain and in most of her colonies, occupational diseases are in general not compensable at present. In the United States there are four exceptions to this: California, Hawaii, Massachusetts, and the federal government. In all other states occupational diseases are excluded from compensation.

Occupational diseases are classified by Hookstadt as follows:

1. Diseases due to gradual absorption of poisons: e. g., lead poisoning.
2. Diseases, the germs of which enter the system through the skin: e. g., anthrax.
3. Skin affections from acid or other irritants: e. g., eczema.
4. Disease due to fumes or dust entering the system through the respiratory organs: e. g., tuberculosis.
5. Diseases due to vocations or constant use of particular members: e. g., telegraphers' cramp.
6. Miscellaneous diseases: e. g., caisson disease.

The states have varied in their decisions as to whether all, except the first of the above six types of diseases, are strictly occupational diseases. Although several of the states not allowing compensation for industrial diseases have viewed certain of these classes of diseases from the standpoint of accidents, all of these states have been relatively uniform in the legal theories and principals underlying their decisions. Compensation for occupational diseases has usually been granted under accident provisions if one or more of the following conditions existed:

1. If the disease resulted in violence to the physical structure of the body.
2. If the injury occurred unexpectedly or out of the usual course of events.
3. If the injury could be traced to a definite time and place of employment.
4. If the injury was not due to a known and inherent risk of the occupation.

In the absence of definite provision for compensation for occupational diseases, there has been a tendency to interpret accident compensation laws as broadly as possible.

In Great Britain occupational diseases have been compensable under the Workmen's Compensation Act since 1906. The law that year provided for compensation in case of specified diseases. Since 1916 this list of diseases has been enlarged (see table, page 206, of Hookstadt's discussion). The Canadian provinces have instituted similar legislation modeled after the British Act of 1906. In most of the European countries occupational diseases are cared for through compulsory sickness and invalidity insurance, though there is a tendency at present to include occupational diseases under the accident insurance laws. —C. H. Paull.

HEALTH INSURANCE, THE MEDICAL PROFESSION, AND THE PUBLIC HEALTH. *B. S. Warren.* U. S. Pub. Health Ser., Pub. Health Rep., April 18, 1919, 34, No. 16, 775-789.—Health insurance is a method whereby a group of individuals share the economic loss due to sickness. By careful gathering of data from chosen units of population the "sickness expectancy" or rate of sickness may be determined. The author has collected valuable data from many sick benefit associations, and from these data an estimate is given of an average annual rate of sickness of 9 days per injured person.

Health insurance would require the working out of a method for remunerating the physicians. The contract system which is now in use in many government services, or some other method, might be satisfactorily worked out. A panel of physicians from whom those sick may take their choice is suggested, the pay to be by fee, yearly contract, or part-time contract basis. The "premium on sickness" would be remedied by health insurance.

In the working out of the plan the existing health organizations should be used, to avoid duplicating of work. A medical referee would have to be detailed to each group of about 4000 insured persons. He would decide upon the nature of sickness and the length of disability, and should not be dependent upon the local unit for his position. Selection of referees should be by examination, both physical and mental. By proper effort there could be built up a strong state organization for health.—E. H. Reeves.

FIRST ANNUAL REPORT OF SOUTH DAKOTA INDUSTRIAL COMMISSIONER FOR THE TWELVE MONTHS ENDING JUNE 30, 1918.—This report deals entirely with the Workmen's Compensation Law. The workings of the law are discussed and sections of it are criticized. Its relation to threshers and to agricultural employees receives special attention. Statistics concerning the number of accidents and fatalities and the number of compensations awarded are given.—Hazel Andrews.

FIRST ANNUAL REPORT OF THE INDUSTRIAL ACCIDENT BOARD OF THE STATE OF IDAHO, 1918.—This report deals entirely with compensation, discussing the history of compensation legisla-

tion in the United States, the organization and preparation of the Workmen's Compensation Board, and the history of compensation legislation in Idaho. The general provisions of the Idaho law are given, with statistics on cases.—Hazel Andrews.

REHABILITATION OF DISABLED EMPLOYEES

INDEX-CATALOGUE OF A LIBRARY ON REHABILITATION OF THE DISABLED. *Douglas C. McMurtrie.* Am. Jour. Care Cripples, March, 1919, 8, No. 3, 191-295.—This large library includes many articles in German periodicals. The index-catalogue makes a useful bibliography of the subject.—T. J. Putnam.

PUBLICATIONS OF THE FEDERAL BOARD FOR VOCATIONAL EDUCATION. Washington, Feb., 1919, 23 pp.—A list and description of the publications of the Board.

Two *Annual Reports* have been issued, describing the organization and work of the Board.

The *Bulletins* prepared by the Board are pamphlets of from 15 to 300 pages each. The majority of them are outlines of practical courses in various trades, industries and vocations, and in agriculture. Bulletin No. 1 is a detailed statement of the policies and methods of the Board. Bulletin No. 23, Clothing for the Family, is the first of a series on Home Economics. About 30 bulletins are now ready.

The *Rehabilitation Leaflets* are addressed to discharged and disabled soldiers, sailors and officers. They describe in a general way the aims and methods of the Board.

The *Opportunity Monographs* are from 5 to 40 pages long. They are intended for the discharged service man, to help him decide what occupation to adopt or to train for. A sketch of each kind of work is given, and the training and qualifications desirable in it are outlined. Special attention is given to the possibilities of employment of cripples. About 40 of these pamphlets are already published.

All these publications are free for distribution, and may be had by application to the Federal Board for Vocational Education, Washington, D. C.—T. J. Putnam.

NORMALIZING THE INDUSTRIAL CRIPPLE. *Elizabeth G. Upham.* Am. Industries, May, 1919, 19, No. 10, 30.—This is a short but thoughtful discussion of some of the differences in mental outlook in the war and in the industrial cripple.—C. H. Paull.

TRAINING FOR DISABLED SOLDIERS AND SAILORS. *Arnold Levitas.* Educational Review, April, 1919, 57, No. 4, 312-320.—The great number of disabled men now returned to industrial life, and the great variety of disabilities introduce new problems, the solution of which falls in part upon the government. There must be a development of vocational and research bureaus, and industries must be considered analytically to meet the new difficulties of adjustment.—G. E. Partridge.

THE REHABILITATION OF DISABLED SOLDIERS AND SAILORS OR VICTIMS OF INDUSTRY. *C. H. Winslow.* The Jour. Nat. Education Assn., April, 1919, 3, No. 8, 521-522.—It is the duty of the government to replace the men of the army in industry, with due regard to the capabilities of the individual. This is a part of the grim business of war, and is no philanthropic venture. The recuperative and competitive power of the nation is dependent upon it.—G. E. Partridge.

OPPORTUNITIES FOR HANDICAPPED MEN IN THE BRUSH INDUSTRY. *Charles H. Paull.* Publications of the Red Cross Institute for Crippled and Disabled Men. May 1, 1919, Series 2, No. 7, 56 pp.—The brush industry is a large and well-established one in the United States, employing over 7,000 persons in 1914. The operations are very varied, and for the most part, moderately skilled. The wages range from $12 to $30 a week. The various operations are described in sufficient detail to give an understanding of the sort of labor required, and the types of disability to which each is adapted. A large majority of the operations can be carried on by men who have lost one or both legs, or two or three fingers, or who have hernia, heart trouble, or defective hearing. Two of them can be adapted to blind men, and two others to men who have lost an arm or a hand. An excellent cross-index is furnished.—T. J. Putnam.

INDUSTRIAL SURVEYS OF THE LEATHER INDUSTRIES. *Gerald A. Boate.* Am. Jour. Care Cripples, Feb., 1919, 8, No. 2, 125-160.—This survey was undertaken with special reference to the possibilities of the employment of cripples, the opportunities for training them, and the permanence and desirability of the work for them. A majority of the operations of the leather trade are covered.—T. J. Putnam.

GOVERNMENTAL PROVISION FOR THE BLINDED SOLDIER. *James Bradley.* Am. Jour. Care Cripples, April, 1919, 8, No. 4, 310-313.—Teaching the proper attitude must come first. The courses given are divided into required and selected. The required courses include physical training, personal hygiene, fundamental hand training, reading, writing of Braille, and typewriting. The elective courses involve individual treatment, taking into consideration the man's previous occupation, opportunities for occupation in his own home, and his temperament. The elective courses may be classified as industrial, agricultural, and home work. After a certain amount of training in these subjects, a man may receive further instruction under the guidance and at the expense of the Federal Board for Vocational Education. No occupation is taught in which the economic advantage to both the employer and the employee is not clearly manifest.—L. A. Shaw.

ABSTRACT *of the* LITERATURE

OF

INDUSTRIAL HYGIENE

VOLUME I SEPTEMBER, 1919 NUMBER 5

CONTENTS

	PAGE
General	63
Systemic Occupational Diseases: Occurrence, Treatment and Prevention	66
Poisonous Hazards and Their Effects: Gases, Chemicals, etc.	66
Dust Hazards and Their Effects	69
Occupational Infectious Diseases: Occurrence, Treatment and Prevention	69
Occurrence and Prevention of Industrial Accidents	70
Industrial Surgery	71
Nutrition and Metabolism	71
Women and Children in Industry	71
Medical Dispensaries and Hospitals in Industrial Plants	72
Industrial Nursing	79
Industrial, Personal, and Community Hygiene: Housing	79
Industrial Management in Its Health Relations: Special Tests in the Selection of Employees	80
Workmen's Compensation and Insurance	81
Rehabilitation of Disabled Employees	81

GENERAL

LABOR ADMINISTRATION IN THE SHIPBUILDING INDUSTRY DURING WAR TIME. II. *P. H. Douglas* and *F. E. Wolfe.* Jour. Pol. Econ., May, 1919, 27, No. 5, 362-396.—This is the second article of the series. It elaborates on the functioning of the organizations described at length in the first article. On page 380 is a brief description of the Health and Sanitation Section of the Fleet Corporation.

"The field sanitary engineers inspected the shipyards every thirty days. The section supervised and organized first-aid work for injured men and provisions for medical attention, dispensary and hospital facilities, medical inspection and quarantine. It improved the sanitation about the shipyards as to water supply, toilets, sewage disposal, bathing facilities, pure food, and mosquito extermination. . . . Vaccine and typhoid serums were supplied to all yards when needed."

Following this is an explanation of the work of the Safety Engineering Section. "It seems probable that, as a result of safety measures, from 12,000 to 13,000 fewer accidents occurred during the last quarter of 1918 alone than would have occurred had the pre-war conditions existed. Such a showing is all the more remarkable when the sudden expansion of the industry and the addition of nearly 300,000 'green men' is considered. . . . Sixty-nine shipbuilding companies were enabled to secure a reduction in their insurance premiums because of the safety measures introduced at the instance of the Safety Engineering Section. This reduction totaled in all several millions of dollars."—Linda James.

CONFERENCE ON BUSINESS TRAINING FOR ENGINEERS AND ENGINEERING TRAINING FOR STUDENTS OF BUSINESS. School and Society, July 12, 1919, 10, No. 237, 44-45.—This is a report of a conference called by the Commissioner of Education at Washington on June 23 and 24 on be-

half of the Conference Committee on Commercial Engineering. The purpose was to direct public attention to the need in our country for an increasing supply of well-trained men, combining the engineering and the economic points of view. In large scale industrial production and commercial enterprise, the man of the future most helpful in eliminating waste of machinery, materials, and men, will be the man whose training will represent the principles both of engineering and business practice.—G. E. Partridge.

PHYSICAL REJECTION FOR MILITARY SERVICE: SOME PROBLEMS OF RECONSTRUCTION. *J. H. Beard.* Scientific Monthly, July, 1919, 9, No. 1, 5-14.—The draft has been a great inventory of the resources of the nation; it has shown both our physical assets and our human liabilities. There is evidence that from 50 to 60 per cent. of the men between 31 and 46 years of age could not have passed for general military service if the physical requirements had remained unchanged. An examination of the causes for rejection shows that many defects could have been prevented or promptly cured. The lesson to be learned, in the interest of conserving the power of the nation, is that physical education and preventive and corrective measures in general must be regarded as an all-important part of the work of reconstruction. The paper contains a table showing the total number of rejections for various causes, and some of the causes are discussed with reference to their prevention or correction.—G. E. Partridge.

PHYSICAL EDUCATION IN THE LIGHT OF THE PRESENT NATIONAL SITUATION. *A. D. Browne.* Am. Physical Education Rev., Feb., 1919, 24, No. 2, 69-74.—Experiences of the war have shown that as a nation we are physically unfit, both for war and for work. About 45 per cent. of the men examined for the army were rejected. Radical change in the situation can be made only by beginning in the schools and educating the public to understand the importance of physical training, which must include something more individual and more technical than games and group exercises. We must begin now to train in the grammar school for military service, by physical training methods, and with this there must be a careful estimation of the physical status of all pupils. Thus two objects will be gained, and advantage taken of the momentum of public interest.—G. E. Partridge.

WHAT THE WAR SHOULD DO FOR OUR METHODS IN PHYSICAL EDUCATION. *E. H. Arnold.* Jour. Nat. Education Assn., May, 1919, 3, No. 9, 631-634.—The experiences of war have shown that many men who are now unqualified may be made fit for service by methods of physical training. The fact that one-third of the men in the prime of life are unfit for war suggests a serious problem. It is quite evident from the statistics that neither nativity, nor industrial conditions, nor city or country life, nor presence or absence of physical education in the narrower sense has influenced the physical unfitness to any great extent, but that the cause must be sought in hygienic conditions. Physical education and the teaching of hygiene are the remedies.—G. E. Partridge.

SELECTED BIBLIOGRAPHY OF PHYSICAL TRAINING AND HYGIENE. *G. B. Affleck.* Am. Physical Education Rev., Jan., 1919, 24, No. 1, 17-26; March, 1919, 24, No. 3, 147-154; April, 1919, 24, No. 4, 213-218.—Includes several topics of interest to the student of industrial hygiene.—G. E. Partridge.

THE EUGENIC ASPECT OF SELECTIVE CONSCRIPTION. *R. H. Johnson.* Scientific Monthly, July, 1919, 9, No. 1, 15-17.—Common sense and consideration for the future ought to be displayed to a greater extent in the selection of men for military service and in the details of assignment to duty, in such a way as to make the service as little wasteful as possible of valuable men and valuable qualities in the race.—G. E. Partridge.

WHAT THE WAR SHOULD DO FOR OUR METHODS IN VOCATIONAL EDUCATION. *W. J. Bogan.* Jour. Nat. Education Assn., May, 1919, 3, No. 9, 637-641.—The war has proved that the public schools are able to give a very practical training, at the same time stimulating ambition and fostering a true Americanism, and developing respect for skilled work. We see now that the school is the only place where trades can be taught, using school in a broad sense. The day of the fancy glove-box in manual training work has gone, and the war has shown the great interest that can be created in producing practical results. The war has taught the value of speed in school shops. Previously time had been wholly neglected as a factor, and the shop work of the schools conducted as though life were eternal. A serious defect in the traditional schools was their practice of digging broad but shallow foundations. The war has taught the value of intensive shop and drawing courses planned for a specific need. The war has demonstrated the need of co-operation between the schools and industry. The war has proved that boys thrive under the pressure of responsibility.—G. E. Partridge.

THE FOUNDATION OF A GERMAN SOCIETY FOR SOCIAL HYGIENE. *W. Hanauer.* Archiv für soziale Hygiene und Demographie, Aug., 1915, 2, No. 1, 1-9.—Plans are outlined for an organization for the promotion of the interests that are centered in the field of social hygiene as separate from public hygiene and other aspects of hygiene that may be differentiated from social hygiene. The especial problems of social hygiene have arisen with increasing industrialization, concentration of population, etc., and so far the most characteristic practical results are in the nature of industrial laws and means of safeguarding labor.—G. E. Partridge.

CHRONICLES OF SOCIAL HYGIENE. *A. Elster.* Öffentliche Gesundheitspflege, 1916, 1, 3, 175-188. Received July 9, 1919.—*Öffentliche Gesundheitspflege* is apparently a continuation of *der Deutsche Vierteljahrsschrift für öffentliche Gesundheitspflege,* which ends with the forty-

seventh volume, the new publication appearing monthly. Dr. Elster's article is a brief review of advances in the field of social hygiene, and these reports are to be continued each month. The present review includes studies of population, school hygiene and the care of children, the effects of the war, prevention of contagion, nutrition, industrial hygiene and social insurance, housing. —G. E. Partridge.

HUMAN RELATIONS DEPARTMENT FROM THE STANDPOINT OF THE INDUSTRIAL PHYSICIAN. *Otto P. Geier.* Ind. Management, June, 1919, 57, No. 6, 503-504.—The least important work which the industrial physician does is the hasty physical examination of applicants for employment, and attention to minor injuries. He should be the point of most intimate contact between the company and the men, should see that safety and sanitary devices are kept in service and in good order, and should encourage the employees to come to him for examination and advice whenever they are sick.—T. J. Putnam.

HUMAN RELATIONS AND THE INDUSTRIAL PHYSICIAN. *Robert S. Quimby.* Ind. Management, June, 1919, 57, No. 6, 503a-503b.—The scope of an adequate health program includes the following main activities:

1. Physical examination at the time of hiring, and subsequently as conditions indicate.
2. Advice to the employment department as to the proper placement of defectives.
3. Supervision and follow-up treatment of these defectives.
4. Facilities for the treatment of medical, surgical, dental, ocular, and other types of cases.
5. Investigation and, in many cases, nursing and medical treatment of home cases.
6. A system of benefits sufficiently adequate to tide over the disability period.—T. J. Putnam.

HEALTH OF OHIO COAL MINERS. III. *Emery R. Hayhurst.* Ohio Pub. Health Jour., April, 1919, 10, No. 4, 166-170.—The medical care of the Ohio mining industry is supervised by the workers themselves, if any is given. Organizations for such purposes depend upon (1) the size of the working force, (2) the location of the mine in respect to towns and cities, (3) the racial complexion and (4) the attitude of the local union. Sick benefit associations are apparently decreasing in number, whereas the national fraternal secret sick benefit associations are well represented and include about 50 per cent. of the miners. Practically all the foreigners belong to one or more associations. The usual forms of industrial insurance are everywhere present. The benefits derived from state compensation for injuries are evident. Death benefit associations are also everywhere.

A first-aid equipment meets with the bare requirements of the law. Injured men are rushed to any convenient place for first-aid treatment and then home, where they come under the supervision of their own physicians. No physical examinations of applicants for work are made. In the case of an epidemic, everything is left to the local health authority. The trained nurse is almost unknown.

Figures are given on the following topics: Stability of medical practice, contract practice, fee rates, ratio of physicians to population, and non-medical practitioners.—L. A. Shaw.

TRAFFIC IN NARCOTIC DRUGS. Report of Special Narcotic Committee, Treasury Dept., June, 1919, 29 pp.—This report deals with the traffic in opium and coca leaves, their preparations and habit-forming alkaloids, which are covered by the Harrison Act. Statements and tables applying to the legitimate traffic in these drugs are given. The "underground" traffic is estimated to be equal in magnitude to the legitimate traffic. That the consumption of narcotic drugs in this country has steadily increased from the date of their introduction is clearly shown by one table; and by another, the fact that this country consumes from thirteen to seventy-two times as much opium per capita as is consumed by European countries. The per capita consumption of both cocaine and opium in this country, making due allowance for that used for legitimate purposes, gives us some idea of the extent to which these drugs are used for the satisfaction of addiction. For the purpose of compiling statistics, questionnaires were sent out to all physicians registered under the Harrison Narcotic Act, for data as to the number of addicts under treatment by them, and to druggists for a statement of narcotic prescriptions filled. The tables indicate that there are 237,655 addicts and 18,299,397 prescriptions containing narcotic drugs yearly. Questionnaires were likewise sent out to the chiefs of police of all cities in the United States with a population of 5000 or more, to penal institutions, to almshouses, to municipal health officers and to private hospitals and sanatoria.

Detailed statistics are included of the sales of narcotic preparations dispensed, which are exempt under the law. There is a summary of the article followed by conclusions and recommendations. Legislation providing for the treatment of addicts is much needed. The question of international traffic in opium and cocaine should be taken up as soon as possible, especially with Canada and with Mexico. Public educational campaigns should be instituted, and physicians and hospitals should be provided with facilities for research into the nature and treatment of drug addiction. The manufacture and administration of heroin should be absolutely forbidden, as the medical need for it is negligible compared with its evil uses, and it can easily be replaced without therapeutic loss with other safer morphine derivatives.—L. A. Shaw.

NARCOTIC DRUG CONTROL. *W. R. Herrick.* City of New York, Weekly Bull. of the Dept. of Health, July 12, 1919, 8, No. 28, 218-221.—The State Commissioner of the Department of Narcotic Drug Control of New York City has promulgated sixteen rules and regulations to cover the dispensing of cocaine and opium to drug addicts.—L. A. Shaw.

EFFECTS OF SMOKING ON MENTAL AND MOTOR

EFFICIENCY. *O. J. Johnson.* The Psychological Clinic, May 15, 1919, 12, Nos. 5-9, 230-235.—The tests used were aiming, tapping, color naming, addition, steadiness. The subject usually took the tests at 4.30 P. M., then smoked a cigar, then repeated the tests at intervals in the evening and the next morning. The writer concludes that the effects of smoking are very detrimental to muscular control and also to the purely mental processes studied.—G. E. Partridge.

SYSTEMIC OCCUPATIONAL DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

FIGHTING CANCER WITH FACTS. American Society for the Control of Cancer, 25 West 45th St., New York City, Feb., 1916, 8 pp.—The society is conducting a nation-wide campaign "to disseminate knowledge concerning the symptoms, diagnosis, prevention, and treatment of cancer, to investigate the conditions under which cancer is found and to compile statistics in regard thereto." This is one of the leaflets published for popular distribution by the society. Others are: *What You Should Know About Cancer; How the Public Health Nurse Can Help to Control Cancer; What to Do About Cancer* (reprinted from the Providence Journal); *Cancer—a Curable Disease* (reprinted from the Woman's Magazine); *Whitelaw's Experience* (reprinted from the Medical Times); *Free Tumor Diagnosis as a Function of State Public Health Laboratories;* and *Campaign Notes,* a leaflet published monthly, and distributed free to interested persons.—T. J. Putnam.

CANCER. *G. L. Howe,* Eastman Kodak Co., Medical Dept., Health Bulletin No. 37, Sept., 1918, 3 pp.—A leaflet for distribution to the employees of the Eastman Kodak Co., giving the simpler facts about the prevalence, symptoms, and possibility of cure by early operation, of cancer. "After the age of forty, the death rate of cancer is greater than that of either consumption or pneumonia, and of those persons who reach this age one in every eleven dies of this disease. . . . The signs mentioned below will always bear close investigation when they occur at this time of life.

"1. Loss of weight.

"2. Unusual pallor.

"3. Persistent disturbances or 'upsets' of the stomach or bowels.

"4. A wart or mole which shows a tendency to grow.

"5. The appearance of a lump anywhere in the body. It may prove to be only an abscess or some simple harmless tumor—a physician can usually tell. A lump in the breast should always be regarded with suspicion, especially when it appears after the age of forty."

This booklet is an excellent model for literature for distribution among employees. Statistics for use in such bulletins may be obtained from the American Society for the Control of Cancer, some of whose publications are reviewed above.—T. J. Putnam.

CENTRAL NERVOUS SYSTEM

CONCERNING THE RELATIVE FREQUENCY OF INSANITY IN CITY AND COUNTRY. *H. M. Swift.* Bulletin of the Massachusetts Commission on Mental Diseases, Oct., 1918, 2, No. 3, 190-193.—From the United States as a whole the number of admissions to state insane hospitals during the year 1910 was 86 per 100,000 population from cities and towns of more than 2500 inhabitants, against 41 per 100,000 from places of less than 2500. Environment must be blamed in part for the differences, although alcohol and syphilis are factors; but it is also probably true that the city tends to draw from the country the predisposed families.—G. E. Partridge.

BIBLIOGRAPHY OF FEEBLE-MINDEDNESS IN ITS SOCIAL ASPECTS. *L. W. Crafts.* Journal of Psycho-Aesthenics, Monograph Supplements, Mar., 1917, 1, No. 3, 73 pp.—Comprises 956 titles, and includes many articles directly or indirectly bearing upon questions of economics, industry and education.—G. E. Partridge.

INDUSTRIAL EFFICIENCY OF THE MORON. *G. Ordahl.* The Training School Bulletin, Feb., 1919, 15, No. 10, 145-153.—Large numbers of high-grade feeble-minded are now being discovered. The study attempts to show the relative efficiency of the high-grade feeble-minded as compared with that of the normal adult working in the same factory at the same time. The work consisted mainly of peeling tomatoes for canning. The morons showed about 68 per cent. efficiency as compared with the normal women.—G. E. Partridge.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

ARSENIC INTOXICATION IN THE INDUSTRIES OF COAL AND ITS DERIVATIVES. *Ad. Bayet* and *Aug. Slosse.* Comptes rendus de l'académie des sciences, Mar. 31, 1919, 168, No. 13, 704-706.—Our researches started from an inquiry in a briquette factory because of a disease affecting the workers called "pitch disease" from the name of the tarry substance used to bind the coal dust.

Among other symptoms, exceptional frequency of cutaneous cancer was found, of a kind particu-

larly serious, and causing a mortality of 30 per cent. of the workers affected. The symptoms shown by the workmen were various, but it was possible for one of us, by minute clinical observations, to separate out from the multiplicity of morbid manifestations a group of symptoms, which on examination showed striking analogy with those of chronic arsenic poisoning. These symptoms were (1) pigmentary troubles consisting essentially in a general and diffuse hyperpigmentation of the skin (*melanodermie*), localized pigmentation and sometimes colorless spots; (2) inflammatory and atrophic changes in the skin which, coupled with the pigmentations, constitute a special condition of the skin (*l'état sclerodermique*) such as one finds in a senile skin and in the condition brought about by radium; (3) thickening of the skin, notably warts situated generally on the scrotum; (4) cutaneous cancer situated most frequently on the scrotum and neighboring parts. This frequently multiplies and appears at a relatively little advanced age. But these cardinal symptoms of pitch disease are found with others of essentially the same character in chronic arsenic poisoning, as described by Hutchinson. The secondary symptoms of importance are found also in chronic arsenical poisoning, and that down to the smallest details. There is thus striking identity between the symptoms of pitch disease and chronic arsenical poisoning, but such conclusion, based on clinical evidence alone, should be submitted to analytical tests. It was necessary to show that arsenic exists in the substances handled by the workers and then in their own bodies. These tests were made, taking the greatest precautions possible, the method used being that of Striszowsky. We can demonstrate the presence of arsenic:

1. In the pitch.
2. In the dust floating in the air of the factory.
3. In the hair of all the workers, and that in notable quantities.
4. In the urine of the workers.
5. In the blood of the majority of them.

As a proof, we tested the blood, hair and urine of other workers in the same district, but not working in briquette factories. They contained no arsenic. The conclusion to be drawn from these tests is that the workers in briquette factories are subjected to an obvious arsenical impregnation. The two methods of proof are thus seen to converge—clinical on the one hand, and chemical on the other. The symptoms observed, therefore, in individuals working in pitch, we may conclude, are those of chronic arsenical poisoning. But this question of chronic arsenical poisoning is not limited to briquette factories. Indeed, one finds in quite a series of trades using coal and its derivatives, a picture identical with that of pitch disease. The similarity is such that all who have occupied themselves with the question include them all in the same class; as, for example (1) chimney sweeps' cancer, characterized by melanoderma, warts commencing early, often multiplying and situated generally on the scrotum. With these must be classed workers packing soot and the class of arsenicism observed among the workers cleaning the inside of steam engines; (2) affections among workers distilling tar and those working in paraffin refineries; this malady also has as its principal symptoms melanoderma, hyperkeratoses, and cancer identical with that of pitch workers; (5) affections of asphalters, those tarring the railway lines, and workers making tar paper.

Arsenic found in soot, tar and its by-products comes originally from coal in which we have constantly found it. It has been known for a long time that there are coals rich in arseniferous pyrites, but one did not suspect that it was so generally true, nor that it could have such pathological consequences. We can thus say generally that there is a form of industrial arsenic intoxication, widespread, affecting a large number of workers, and having coal as its starting point.—T. M. Legge.

WAR INDUSTRIAL DISEASES. *Alice Hamilton.* Med. Rec., June 21, 1919, 95, No. 25, 1053-1059.—In August, 1914, there were many nitroglycerin plants, a sufficiency of gunpowder factories, only one small plant making T.N.T. on a small scale and a few plants making nitro cotton and smokeless powder. By 1916, forty to fifty plants were making explosives, and in forty-one of them 30,000 persons were employed in work which brought them in contact with some industrial poison. This excludes ordinary gunpowder, for no poisons are involved in its manufacture. Intoxication is produced by both inorganic and organic substances. Of the former, nitric acid is the most important, as it is used in the form of mixed acid in all nitration processes. All explosives, except gunpowder, are nitrated bodies. One hundred per cent. acid is used for higher nitrations. This is hard to control. It eats through almost any substance and causes leaks. The most important organic compounds are benzene, toluene and anilin.

In a first survey, 2432 cases of poisoning were discovered, seventy-five of which were in women. Among these were 111 cases of fulminate dermatitis, lasting from twenty-four to forty-eight hours; a mild anilin poisoning in 200 more, of the same duration; and 702 T.N.T. intoxications. There were thirteen deaths from T.N.T., twenty-eight from nitrous fumes, and seven (out of a total of fourteen cases) from benzene intoxication. The problem of protection against nitrous fumes was solved by 1918; whereas T.N.T., being less understood, proved to be a more difficult question.

A nitric acid explosion consists of an escape of fumes of the pale lower oxides of nitrogen and orange colored higher oxides. Tolerance of a dangerous amount of these fumes cannot be acquired. Death results from edema of the lungs. There is no more immunity from fume poisoning than from nitric acid burns on the skin. In nonfatal cases, laryngitis, with edema of the glottis, may develop, as well as erosion of the enamel of the teeth. The labor turnover was too great to permit the collection of data on the effect of breathing in small amounts over a long time.

In the manufacture of picric acid there is danger from nitrous fume poisoning, from the picric acid itself, from the phenol, and from the

exposure to benzene involved in the production of phenol for picric acid.

The manufacture of T.N.T. in America has been associated with much poisoning, in fact, with much more than in England. Seven hundred cases, of which thirteen were fatal, were encountered, and doubtless there were many more unreported cases and deaths. Hudson calls "minor T.N.T." that with symptoms as follows: bitter taste in the mouth, gastro-intestinal indigestion, constipation, rarely diarrhea; then, severe general malaise, headache, pain in the chest, vertigo, weakness in the limbs, lips cyanotic, the skin of the face yellowish. Old chronic cases, or those with repeated mild attacks, develop neuritis of the lower extremities. Some men complain also of a bad taste in the mouth, loss of appetite, persistent headache, nausea and cramps in the abdomen. Still others complain of cough, sore throat, tightness in the chest, running eyes and burning nose. As a usual thing the urine is darker in color. Such cases, with prompt eliminative treatment, recover rapidly; if neglected, however, they advance to a more serious stage.

In one case at autopsy, toxic hepatitis, tubular nephritis, secondary anemia and icterus were found; in another, aplastic anemia with secondary degeneration in the parenchymatous organs. Dr. T. H. Harrington of Boston describes several cases suggestive of poisoning by other compounds, because of the fatal rapidity of their course.

An investigation was conducted in June under the National Research Council with the following results: (1) It was concluded that, although not the only channel of absorption, the skin is by far the most important one. (Instances of fume poisoning purely are related, however.) (2) The younger men were found to be more susceptible. (3) No light was thrown on the subject either of sex or of race susceptibility, except that negroes are probably less susceptible than whites. (4) Urinary tests show rapid absorption of T.N.T., if exposure is great; and rapid elimination, if exposure is stopped. Hence the desirability of eight-hour shifts and one day's rest in seven.

The early symptoms are: short breath on exertion, dizziness on stooping over, headache, fatigue and poor appetite. These, with a positive Webster test, should lead to temporary shifting from T.N.T. work in order to avoid serious poisoning.

These studies in munition poisons may be of use in peace time industries, inasmuch as (1) the manufacture of nitric acid will go on; (2) picric acid is an important dye; (3) celluloid and films for moving pictures are made much the same as is nitro cotton; (4) T.N.T. may take the place of nitroglycerin for surface blasting. Many of the nitro compounds of the benzene ring, better understood than T.N.T., are now used in American dye works.—W. Herman.

TRINITROTOLUENE POISONING. *C. Voegtlin, C. W. Hooper*, and *J. M. Johnson*. U. S. Pub. Health Ser., Pub. Health Rep., June 13, 1919, 34, No. 24, 1307-1311.—Dogs were used for the experimental work, as they are more susceptible than rodents. The usual symptoms were cyanosis, constipation, followed by diarrhea, salivation, incoordination, icterus, and anemia. The cyanosis may disappear late in the poisoning. The drug is readily absorbed when administered subcutaneously in oil, by mouth, or as a dust into the lower air passages. The blood of poisoned animals may show a positive Webster test. The urine gives a positive Webster two or three hours after the drug is administered; but in a later stage of poisoning it may become negative, indicating, perhaps, an altered method of dealing with the chemical. The bile may give a Webster test, but the feces are always negative. The trinitrotoluene was administered over long periods of time in doses of from 5 to 33 mg. per kilo of body weight. The toxic dose is probably less than 180 mg. for an average adult man. Variations in susceptibility are marked. Susceptibility is increased by anemia or any infection. Dogs do not become immune, but certain symptoms, such as cyanosis and inco-ordination, may decrease or disappear during continued administration of the drug. No difference was observed between the action of purified trinitrotoluene and that of the crude material. A meat diet was found to have some prophylactic value. The usual blood changes were as follows: a reduction in the total blood volume, the blood corpuscle, the hemoglobin, and the pigment volume; the appearance of nucleated blood cells, and an increase in reticulated blood cells. Anisocytosis is common, especially at first. The red count is usually decreased, but seldom in proportion to the other blood changes. Among the important urinary findings is that of bile pigments in many cases, especially in those which later develop jaundice. Urine from poisoned dogs never contains more than traces of albumin, and the Fehling test is only slightly positive at times. The gross pathological findings are as follows: decrease of muscular tissue, degeneration of liver, decrease or increase in the size of the spleen, occasionally generalized jaundice. The bone marrow may be hyperplastic or fatty.

On the basis of this experimental work, and also of tests at a shell-filling factory, the authors make several practical suggestions. The hemoglobin of workers should be estimated by some good instrument, such as Sahli's, upon employment and at intervals of fourteen days thereafter. A decrease of 20 per cent. from the original figure should be a signal for the removal of the man from contact with the material. An examination of the urine for bile pigments should be made about as often; Huppert's or Rosenbach's test is recommended. Cyanosis and incoordination are suggestive physical signs. Workers showing an abnormal susceptibility should be eliminated.

It is suggested that trinitrotoluene workers eat at least 150 gm. of meat daily. The skin is probably the chief path of absorption, although considerable amounts may also be inhaled. To prevent skin absorption, a varnish made of 1 part of shellac dissolved in 24 parts of warm 95 per cent. alcohol, to which 1 part of castor oil is then added, may be used on the hands. A similar varnish for cotton gloves may be made of 2 parts shellac, 1 part castor oil, and 8 parts alcohol. These varnishes may be washed off with alcohol Workers should be made to wash their hands in 10 per cent. solution of sodium sulphite at the

end of the day. Workers with anemia or any symptoms indicating lowered body resistance should be excluded.

The detailed report will appear in the near future as a Hygienic Laboratory Bulletin.—T. J. Putnam.

GAS MASK ABSORBENTS. *A. B. Lamb, R. E. Wilson,* and *N. K. Chaney.* Jour. Indust. and Engin. Chem., May, 1919, 11, No. 5, 420-438.—The new absorbent for the American army masks, consisting of 75 per cent. specially impregnated charcoal and 25 per cent. of soda-lime without permanganate, is the best all-around absorbent available. The requirements for a gas-mask absorbent are: absorptive activity, or a high rate of absorption; absorptive capacity; versatility; mechanical strength; chemical stability; low breathing resistance; ease and cheapness of manufacture; and proper balance of ingredients to produce and preserve the other properties under varying conditions. The average air velocity through the army canister is about 80 cm. per second. The absorbent must be capable of reducing the concentration of a gas from 1000 p.p.m. to 1 p.p.m. or less, in about 0.01 second. It must further be able to hold this absorbed gas permanently. The standard test for absorbents is the accelerated chlorpicrin test, which consists in passing a stream of dry air containing 7000 p.p.m. of chlorpicrin, at the rate of 1000 cc. per sq. cm. through a 10 cm. layer of the absorbent, until the first trace begins to come through. The last two months' product of the service absorbent gave a material averaging fifty minutes on this test. The authors discuss at length the various sources of charcoal, and the best methods of activating it —that is, of increasing the amount of active capillary surface which it contains. They also mention the effect of various external conditions upon the finished product. The special soda-lime, the composition of which is also detailed with special reference to its industrial possibilities, contained hydrated lime, cement, kieselguhr, and sodium hydroxide.—T. J. Putnam.

DUST HAZARDS AND THEIR EFFECTS

THE DUST HAZARD IN THE ABRASIVE INDUSTRY. *C.-E. A. Winslow, Leonard Greenburg,* and *D. Greenberg.* U. S. Pub. Health Ser., Pub. Health Rep., 34, No. 22, 1171-1187.—Two studies of tuberculosis have been made in the United States, from the standpoint of age and industry. These studies disclose the fact that in trades involving exposure to mineral and metallic dust the ratio of tuberculosis is one-third higher than that for all occupied males. Dusty trades involving small, sharp, non-absorptive particles are by experiment found to be the most hazardous. The manufacture of abrasive materials is one of the most hazardous occupations. The inorganic particles of fused aluminum compounds and of carborundum are very hard, angular and sharp. Sample photomicrographs are shown and the results of a study in two abrasive factories are given in detail.

The first factory, in which both the carborundum and finished wheels are made, had few protective measures against dust. In one grinding room the exhaust system in operation was grossly inadequate on account of poor design and poorer maintenance. Of thirty-eight samples of air taken in work rooms the average number of ¼ standard particles was 31,000,000 per cubic foot of air as against a maximum of 300,000 for a good polishing shop (Winslow, Greenburg and Angermyer). The air in the offices and yards of this factory was found to be very high in dust content.

A study of the second factory, in which only the abrasive material is prepared, showed a much greater dust pollution of both outdoor and indoor air. In this factory one sample taken in a coke grinding room gave the startling number of 669,000,000 ¼ standard particles per cubic foot of air.

The two factories noted above had the highest dust count of any yet reported by any investigator.—E. H. Reeves.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

AGRICULTURAL AND INDUSTRIAL COMMUNITY FOR ARRESTED CASES OF TUBERCULOSIS AND THEIR FAMILIES. *H. A. Pattison.* Federal Board for Vocational Education, June, 1919, Bull. No. 32, Reeducation Series No. 6, 45 pp.—The condition of patients who have undergone treatment for tuberculosis in sanatoria has been the subject of extensive investigation during the past ten years, with the view to determining their condition on discharge, as compared with their condition within a certain number of years after discharge. There is overwhelming evidence to show the need of developing some adequate system of post-sanatorium treatment. The solution to this problem lies in the formation of some sort of "colony." Such a "colony," however, must not be purely agricultural, but must include diversified occupations of an industrial nature in order to fit better the physical and intellectual demands of all types of men and women. Suggestions and plans to this end are herein discussed.—L. A. Shaw.

THE MANAGEMENT OF VENEREAL DISEASES BY THE U. S. WAR DEPARTMENT DURING THE PAST TWO YEARS. *E. L. Keys, Jr.* Pub. Health Jour., June, 1919, 10, No. 6, 253-261.—A review of the methods employed and the results obtained in the control of venereal disease by the U. S. Army during the past two years comprised under the following sections: Pre-War Conditions; The

Anti-Venereal War Campaign; Incidence of Venereal Diseases in the Civil Population; Incidence of Venereal Diseases Before and After Enlistment; Social Hygiene and Medical Prophylaxis; The Future.—L. A. Shaw.

IS EDUCATION A WORTH-WHILE FACTOR IN THE CONTROL OF VENEREAL DISEASES? *H. E. Kleinschmidt.* Social Hygiene, April, 1919, 5, No. 2, 227-231.—Statistics show that during the eight years previous to the war, venereal diseases in the Navy existed at the rate of 165 per 1000; whereas during the period, July 1, 1918, to Dec. 31, 1918, the rate declined to 74 per 1000. The causes of this improvement are attributed to: (a) a better class of men entering the Navy since the war began; (b) placing sailors on a higher plane of public esteem; (c) closing the bawdy house and saloon to the sailor; (d) provision of recreation and entertainment; (e) activities of health authorities in removing carriers of infection; (f) educational propaganda. Especial stress is laid upon the necessity for a vigorous campaign of educational prophylaxis to accompany medical prophylaxis.—L. A. Shaw.

PREVENTIVE PROPHYLAXIS FOR VENEREAL DISEASES. Editorial, California State Board of Health, Month. Bull., May, 1919, 14, No. 11, 368.—The principles which must underlie the suppression of venereal diseases are:

1. The separation of the moral from the medical problem.
2. The realization of the fact that fear of disease is no deterrent to immorality.
3. The conviction that venereal diseases can be eliminated with great certainty.—L. A. Shaw.

PHYSICIANS HELP IN VENEREAL DISEASE FIGHT. Editorial, California State Board of Health, Month. Bull., May, 1919, 14, No. 11, 368.—Nearly 300 physicians in California have pledged their co-operation in the program for venereal disease control, by agreeing:

1. To report all cases in accordance with the California State Board of Health regulations.
2. To secure prompt treatment of all cases coming under observation.
3. Not to dispense medicines in venereal disease cases, and not to recommend self-treatment remedies.
4. To give out circulars furnished by the U. S. Public Health Service and state boards.—L. A. Shaw.

AN ACT TO PREVENT THE SPREADING OF VENEREAL DISEASES. Public Health, Michigan Dept. of Health, July, 1919, 8, No. 7, 296-299.—The Michigan State Department of Health is authorized to adopt rules to prevent the spreading of venereal diseases, to facilitate proper treatment thereof, to regulate isolation of infected persons, to disseminate information to the public, to provide for treatment of cases in proper institutions, to regulate the routine of physicians and of institutions treating said diseases, etc.—L. A. Shaw.

UNLAWFUL TO ADVERTISE VENEREAL DISEASE REMEDIES. Editorial, California State Board of Health, Month. Bull., May, 1919, 14, No. 11, 369.—A law has been passed in California, prohibiting any person or association, except boards of health, from circulating any printed matter concerning venereal diseases, self-abuse, or sexual indulgence; or any medicines or device that may be used therefor.—L. A. Shaw.

WISE LEGISLATION. Conn. Health Bull., March, 1919, 33, No. 3, 3.—A bill has been passed in Connecticut prohibiting motion pictures on the subject of venereal diseases without a permit from the Commissioner of Health. The purpose is to prevent the commercial exploitation of vice. Intelligent enlightenment, however, is being encouraged with success through exhibitions to men and women separately with short explanatory lectures.—L. A. Shaw.

SANITARY SERVICE RIDS CONSTRUCTION CAMP OF INFLUENZA. *M. D. Kauffman.* Engin. N.-Rec., Mar. 27, 1919, 82, No. 12, 622.—During the height of the influenza epidemic last autumn the construction force building the extension to Camp Custer suffered no diminution on account of disease. Instead, the superior reputation for healthfulness led to an increase of 50 per cent. in the applications for work, when surrounding communities were decimated by the disease. There were only four cases of influenza among a working force of up to 1200 men. No unusual hygienic measure was adopted, but no essential sanitary precaution was neglected, from scrupulous inspection of the men's personal hygiene, to street-cleaning. All but a few of the employees co-operated most cheerfully. The details of the measures adopted are given by the author.—T. J. Putnam.

MALARIA CONTROL AT NITRATE PLANT. *W. G. Stromquist,* Engin. N.-Rec., April 10, 1919, 82, No. 15, 718-720.—Mosquito-eradication measures were carried out over an area of about 60 square miles at Sheffield, Ala., under exceptionally difficult circumstances of labor and locality. Drainage by vertical shafts and ditches, and systematic oiling of ponds and marshes, controlled by inspection for larvae, were the most important features of the work. The cost per square mile was approximately $1,200. Malaria was reduced about 90 per cent.—T. J. Putnam.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

AN ANALYSIS OF TWO HUNDRED AND SIXTEEN INDUSTRIAL ACCIDENTS. *Carl Scheffel.* Med. Rec., April 26, 1919, 95, No. 17, 685-687.—This list of accidents is taken from a plant in which the average number of industrial accidents may well be compared with that of other plants in the same line of industry. Only those accidents which were severe enough to cause loss of time from work are

considered. Males and females were employed in equal number, ranging from 16 to 60 years of age, with 21.6 years as the average. Of 216 accidents, 79 were unavoidable, 111 were due to carelessness, and 26 were due to negligence of fellow employees. It is suggested that with further study some of the 111 accidents, which were due to carelessness, might be eliminated.

A chart is given showing the frequency of accidents at various hours of the day. The plant runs from 7.30 A. M. to 12.30 P. M. and from 1.30 P. M. to 5.30 P. M. In the forenoon the crest of the wave is reached between 8 and 9 o'clock, with a gradual diminution until noon. In the afternoon the highest number of accidents occurs between 1.30 and 2.30. The logical conclusion to be drawn from this chart is that the factor of fatigue may be eliminated, whereas the greater prevalence in the early morning and in the first hour after lunch indicates the factor of "getting warmed up" as an important one. This being the case, rest periods of five to ten minutes, as practised in some plants, may be a danger rather than a desirable preventive measure.

In a chart showing prevalence of accidents by the month, the height of the curve is reached during September and October. Had fatigue been a factor, would not July and August have been more likely?

Chart IV shows the part of the body affected, and demonstrates that palmar injuries are more susceptible to sepsis than any other injuries of the hand.

From Chart V it is learned that new and untried employees suffer more accidents than experienced ones. Employees require at least six months' experience in this industry before they cease to be industrial accident risks above those of the average older employees.—W. Herman.

REDUCING ACCIDENT RISK SECTION. Factory, June, 1919, 22, No. 6, 1380-1382.—Brief comments on "Using Safety Stations" and "Keeping Interest [in safety] at a High Pitch."—C. H. Paull.

AN INVESTIGATION OF STENCHES AND ODORS FOR INDUSTRIAL PURPOSES. *V. C. Allison* and *S. H. Katz*, Jour. Indust. and Engin. Chem., April, 1919, 11, No. 4, 336-338.—The Bureau of Mines has recently made an investigation of the use of stenches as a warning in mines. Other uses of stenches are testing boilers and pipes, and mixing with water gas to indicate leaks. An apparatus, or "odorometer" was developed for measuring the intensity of odors in varying concentrations in air. The odors of twenty-four different chemicals were examined with this apparatus, and the results of the tests are tabulated by the authors.
—T. J. Putnam.

INDUSTRIAL SURGERY

STIFF FINGERS: WITH SPECIAL REFERENCE TO METHODS OF TREATMENT BY METAL AND PLASTER SPLINTS. *P. J. Verrall.* Jour. Orthop. Surg., June, 1919, 1, No. 6, 335-343.—The author considers the problem entirely aside from any treatment of the primary cause of the disability. He illustrates his methods of treatment in the following types of cases:

A. Fingers flexed when wrist is dorsiflexed: extension possible with wrist flexed. He applies splints on flexor surface leaving each joint in deformed position until all distal joints have first been corrected.

B. Wrist movement free: one or more fingers flexed at all three joints, contraction unaffected by position of wrist. For this he has devised a special splint to secure gradual extension without losing the flexion.

C. Free movement at the metacarpo-phalangeal joints: two distal joints flexed. Usually small palmar gutter splints are enough.

D. Metacarpo-phalangeal joints stiff in hyperextension: distal joints straight or slightly flexed. In this type the cause must be treated first, if possible, *viz.*, excision of scars, freeing of tendons, tendon grafting. Here the greatest difficulty, that of getting the joint over the "dead center," can be overcome by using a type of cock-up splint that the author has modified from the original type of Sir Robert Jones, so that he can exert flexion on the fingers in combination with dorsi-flexion of the wrist.—C. C. Lund.

NUTRITION AND METABOLISM

THE PROBLEM OF MALNUTRITION IN SCHOOL CHILDREN. *L. A. Averill.* The American Journal of School Hygiene, March, 1919, 3, No. 1, 1-24.—This article contains new data, reviews and bibliography and deals with the subjects of injurious beverages and malnutrition. As a people, Americans undoubtedly consume too great amounts of carbohydrate foods.—G. E. Partridge.

WOMEN AND CHILDREN IN INDUSTRY

PEACE TIME STANDARDS FOR WOMEN IN INDUSTRY. U. S. Employment Service Bulletin, Dec. 17, 1918. Printed in America. Physical Education Review, Feb., 1919, 24, No. 2, 115-116.—A

brief but valuable set of regulations in regard to hours of labor, holidays, periods of rest, wages, comfort and sanitation, posture at work, safety, selection of occupations, prohibited occupations, uniforms.—G. E. Partridge.

HANDLING WOMEN WORKERS SECTION. Factory, June, 1919, 22, No. 6, 1342-1348.—Comments on "Women on Safety Committees," and "How Better Surroundings Help."—C. H. Paull.

MEDICAL DISPENSARIES AND HOSPITALS IN INDUSTRIAL PLANTS

STUDIES OF THE MEDICAL AND SURGICAL CARE OF INDUSTRIAL WORKERS. *C. D. Selby*, U. S. Pub. Health Ser., Pub. Health Bul. No. 99.—This bulletin, prepared by order of the Surgeon-General, is the result of a survey of the efforts being made throughout the country to deal with the problems of injury and disease in industry. Conditions found are described, tabulated and discussed, and various criticisms and recommendations are made by the author. The pamphlet is, perhaps, especially intended to serve as a guide to factory managers who are contemplating the establishment or amplification of a medical department. The following long abstract consists largely of direct quotations from the bulletin itself:

"One hundred and seventy industrial establishments, variously located in the Eastern and Middle Western States, were visited during the first six months of 1918 for the purpose of studying their medical and surgical facilities for the care of workers. . . . The report which follows is based upon analyses of these data and also upon observations and opinions obtained in these visits. In it are considered the personnel, equipment, activities, methods, and record forms necessary to the care and relief of sick and injured industrial workers and the prevention of sickness among them. Existing conditions relative to the organization, management, and operation of industrial medical departments are described, and standards or ideals which have been suggested by analyses and observations are proposed.

ACTIVITIES OF INDUSTRIAL PHYSICIANS

"Industrial medicine may be defined as the theory and practice of medicine applied to the purpose of preventing and alleviating sickness and injury among industrial workers in order that they may enjoy the benefits of continuous productive employment. It embraces a wide range of medical activities, including sanitation and preventive medicine, diagnostics, internal medicine, emergency and orthopedic surgery, roentgenology, laboratory technic and interpretation, orthodontia, dental prophylaxis, the well-known specialties of the eye, ear, nose, and throat, and other branches of practice.

"Although fundamentally the science of medicine, the position which industrial medicine occupies is similar to that of employment, safety, and compensation. All are specialties in the science of industrial management. Physicians who do not understand this relationship (and medical training does not necessarily contribute to this understanding) have reluctance in accepting the materialistic viewpoints of employers and, conversely, have difficulty in persuading employers to accept their professional points of view.

"Physicians and employers both must realize that industrial medicine is, in a measure, a compromise between the ideals of medicine and the necessities of business. In approaching the compromise this fact should not be overlooked, that medical service in the industries to be of the greatest possible usefulness must benefit primarily the working people. The benefit to industry naturally follows.

"Industrial establishments exist solely for manufacturing purposes, and the basis of their prosperity is the materials or products they manufacture. Production . . . is of the highest order of importance. . . . Anything which is capable of facilitating production is welcome to industry so long as its cost is not excessive. The test is its ability to increase the quantity or to reduce the cost of production without impairing the quality. . . . On the contrary, anything that retards or does not facilitate production is tolerated by industry only so long as it is unavoidable. Accidental injuries are such. By incapacitating the worker, they retard production. Always necessitating surgical treatment, frequently the payment of compensation, and occasionally the substitution of unskilled labor, they are sources of expense. . . . Exigent, humane, and economic reasons force them [employers] to accept and endure the burden of surgical service as a penalty for accidents which industry does not seem able wholly to prevent.

"For the influence which industrial medicine may have upon lost time, labor turnover, etc., it has a strong appeal to employers, but little to the people who work for them. To be fully acceptable, it must supply needs in the industrial lives of both, and those needs must concern the matter of production, for which industry exists.

"Employers and employees are associated in industry because each has something the other needs and both are willing to exchange; the employers their money for labor and the employees their labor for money. In agreeing to an exchange the employers naturally desire as much labor as they can obtain for their money (maximum production at minimum cost) and the employees wish as much money as they can obtain for their labor (minimum production at maximum cost). To complete the bargain a compromise is unavoidable, and although the terms may not be evident they are in substance that the employers agree to pay more and the employees agree to labor more (produce more). The latter action only is relevant to the analysis.

"Being the party of the first part, the employers assume leadership and either try to com-

pel or to assist the employees to live up to their concurrence. If their method is compulsion they are likely to accept their employees as they come, with little or no discrimination, oblige them through stringent supervision or inspire them by premiums, bonuses, and extra pay for overtime to work faster and longer, either or both, and retain them, if they stay, only so long as they are able to meet the requirements for production. This method conduces to exhaustion of the workers. carelessness among them, neglect of their health (sickness), and their safety (injury). It is prolific in spoilage and wastage of output, breakage of tools and equipment, and idleness of machinery. It provokes lost time and labor turnover. For the employers the final results are lessened production and increased cost; they do not want them. For the employees they are lessened ability to produce and reduced pay; nor do they want them.

"If the policy of the employers is to assist their working people to greater production, they do so by selecting them with consideration of their fitness for the work they are expected to do, helping them to be regular, dependable, and efficient, and aiding them constantly to increase their value.

"The results that employers may expect from these activities are more of contentment and feelings of goodwill among their employees, greater stability and efficiency in their working forces, maximum of production and relatively low labor costs—results that are beneficial to their employees and society as well as themselves. . . . The ability of physicians to participate in this program establishes the logical relation of medicine to industry."

The industrial physician can chiefly aid the employer to give his workers the opportunity for maximum production along the following lines:

1. *By providing safe, healthy places to work in.*—The custom of a medical inspection of plants, in addition to inspection by the safety engineer, should be more widely followed. The inspections should be at stated periods, and should be made in company with some members of the safety department, if convenient. "Observations should be made to include the premises as well as the buildings and to concern sewage and waste disposal, washing and toilet facilities, ventilating, illuminating and heating or cooling systems, blowers, suction devices, sweeping and cuspidor services, etc. Drinking waters should be examined frequently, unless the sources are unquestionable. Installations for regulating the temperature of drinking waters should be checked up occasionally by temperature tests at the faucets.

"2. [*By providing*] *machinery, tools, methods and processes which permit rapid work of good quality, with health and body hazards reduced to the minimum.*—There are hazards connected with the use of machinery and tools, but they are more evidently hazards to the body than to health. Their reduction to the possible minimum is a matter chiefly for mechanical consideration. . . . Physicians are drawn into the accident problem after the damages have been done, and their relations are apt to be, in the eyes of the management, on a parity with that of a wrecking crew, necessary, but not desirable. They may . . . assist in the prevention of accidents by making available the information they are able to obtain directly from the injured people. This and information obtained from other sources . . . enable the safety engineers to analyze accidents and injuries individually and in series for the determination of their causes. Seemingly with this in mind, a number of medical departments studied make one or more carbon copies of their reports of injuries, and these are sent to safety, compensation, and such other departments as are interested . . . It may be mentioned that there is a relation between physical defects and accidents. . . .

"Mechanical operations possess also hazards to health, which are, of course, less apparent to safety men than to physicians. They are those operations that are monotonous, concentrating, or exhausting, capable of being done easily by some types of people, but full of menace to the health of others. In this connection, likewise, a full knowledge of the physical and temperamental limitations of employees is of much assistance to employing departments, and of great benefit to the operatives themselves. Researches into the physiological effects of fatiguing and enervating operations may permit physicians to cooperate in the selection of qualified workers for the monotonous, concentrating, and exhausting jobs, and incidentally will serve to elevate the practice of industrial medicine to a higher scientific level.

"Certain industrial processes require the use of chemicals that are known to be inimical to health. Certain others cause fumes, gases, and dusts which may be harmful or may be only disagreeable or irritating. Under what circumstances and conditions people may engage in these processes with reasonable safety and effort is a valuable study for the practitioners of industrial medicine, in the pursuit of which they may find many excellent sources of information among the older process workers, upon whom experience has bestowed a wisdom that does not appear in books on occupational diseases. Before attempting to advise in these matters physicians should seek the confidence of the workers by becoming familiar with the processes they use, and they should remember always that these people are experts and are to be treated as such lest the contempt which a professional has for an officious amateur be aroused in their minds.

"3. [By] *competent supervision.* — Industrial physicians meet with many opportunities to clear up differences between employers and their employees. By successfully availing themselves of these opportunities, they are able to foster the feeling of goodwill which is so essential to competent supervision. In seeking to do so they should betray no confidences and at all times should be fair.

"Industrial managements endeavor also to acquire knowledge of the productive capacities and limitations of their operatives, without which they may overwork some and underwork others. The information obtained by physicians through physical examinations permits them to supplement the technical knowledge of the employers

and jointly they are able to distribute equitably the work to be done.

"4. [*By providing*] *the organizations and equipment necessary to ascertain the kind of work applicants for employment are temperamentally, physically, and by training fitted to perform.*—It is reasonable that employers should strive in their selection from applicants for employment to choose only such as may appear adapted to perform the work for which help happens to be needed. With this object in view, applicants are examined in various ways to determine their qualifications, and physical fitness is an important qualification to be considered. As might be expected, this part of the examination is delegated to physicians. Such is the arrangement in 69 of the industrial medical departments studied; the other establishments, at the time of the study, did not require physical examinations.

"The selection of qualified employees implies the rejection of disqualified applicants. . . . Although there was a variance of opinion as to what should be deemed just causes for rejection, these conditions were usually mentioned: Heart and kidney lesions, hernia, varicocele, hydrocele, varicosed veins and ulcers, deformities which impair function, deafness, imperfect vision, and the communicable diseases. There can be no question about the communicable diseases, but unless the principal reason for the rejection of impaired applicants is frankly to obviate the possibility of being forced to compensate them for incapacities of disputed origins or severities, it would seem that physicians who are familiar with working conditions in their establishments could assist in the assignment of a large proportion of the physically defective and by subsequent supervision aid them to do their work well. On the conviction that this is good business, a few officials asserted that the presence of a communicable disease was their only cause for rejection. This is the policy of a storage-battery company of Philadelphia, which company has a department manned by mutes. Two blind men were found in the plant of a large electric motor company at Springfield, Ohio. Fifty-one crippled employees were reported at an Ohio shoe factory.

"6. [*By*] *physical supervision.*—To direct the health affairs of employees competently, physicians should reexamine them with sufficient frequency and thoroughness to be at all times familiar with their conditions of health. How often these reexaminations should be made depends somewhat upon the conditions of the individuals and the circumstances under which they labor. Process workers whose health is subjected to special hazards should be reexamined at least monthly, as required by law in some states. Employees who do not feel well or have the appearance of illness should be examined; also those whose output becomes less than usual, except for reasons that are evidently not physical. Pathological conditions known to exist should be checked up by occasional observations. In justice to both employers and employees, process workers should be examined before being permitted to leave the services of their companies, as is done at a large storage-battery company in Ohio. Employees who have been incapacitated by illness or injury should be examined before reassignment to work. Workers who apply for reemployment should be caused to pass through the same routine as new applicants.

"7. [*By providing*] *protection from the communicable diseases.*—While it may not be possible for doctors to visit personally all employees each morning, it should be understood among foremen and workmen that any person who has a breaking out, or who does not feel well, must report for diagnosis, and treatment if necessary. . . .

"8. [*By providing*] *medical, surgical, and dental treatments when responsible for the conditions requiring such treatment.*—Laws have made employers responsible for injuries, and in some instances for specified diseases which workmen incur during and because of their employment. . . . The chief function of industrial physicians in this connection is to assist sick and injured employees to recover as nearly as possible their normal conditions of health or body with as little loss of time as is consistent with satisfactory progress.

"9. [*By*] *medical and dental prophylaxis.*—This is health instruction by practical demonstrations applied in the treatment of those trivial ailments for the relief of which people rarely seek professional advice. They are those ailments which occur among industrial workers, as well as others, through neglect of their bodies; as, for instance, headaches, constipation, bad teeth, etc. This activity has been proven particularly effective in showing the working people how to care for their teeth, which they seem almost universally to neglect.

"10. [*By providing*] *proper nourishment, at cost or otherwise, during the working day.*—To obviate the bad effects of a cold lunch washed down by cold water, or the bolted meal after a hurried trip home, employers are coming more and more to provide restaurants or cafeterias, where their employees may secure good food at moderate prices. They are also setting up stations from which milk, coffee, or soup may be distributed for morning or afternoon refreshments. For luncheons, physicians are in a position to suggest menus that are adapted to the needs of the employees. Through cooperation with the health officials they are able to assist in the selection of safe food and milk supplies. They may exercise supervision over the sanitation of the kitchens and watch for the presence of transmissible diseases among the food handlers.

"11. [*By providing*] *time and facilities for rest and recuperation*—Many establishments have rest rooms for the use of their employees, especially those in which women are engaged. . . . Which employees need rest or exercise, when they should have it and for how long a period, and if it be exercise, what kind is required, are proper questions for industrial physicians to decide.

"A few concerns have country clubs or sanatoriums where rundown people may be placed for restoration. To whom this privilege should be extended and the conditions under which the restoration periods should be spent are also questions for the doctors to decide.

"12. [*By*] *instructions in how to keep well and*

avoid injuries.—The safety-first movement has impressed employers with the value of instruction in the prevention of accidents. They perceive also the value of instruction in the prevention of sickness, and they must rely upon physicians to conduct the instruction. Whether it should be imparted by personal talks, lectures, bulletins, or otherwise depends upon circumstances and the personality of the physicians. Certainly this is a field that is rich in opportunities for preventive medicine.

"13. [*By providing*] *opportunities for education and advancement.*—Special courses planned to prepare industrial workers for advancement are being offered and are proving popular. These give physicians excellent openings to impress ambitious workmen with the value of their health, especially in its relation to their abilities to advance to better jobs and hold them.

"14. [*By giving*] *assistance in adjusting social and financial difficulties.*—There is a tangible relation between the home and community lives of working people and their industrial efficiency. . . . While listening to other folks' troubles is not a function of medicine it has become an obligation to physicians whether in home or factory; it is a tribute the whole world pays the doctor. Thus it is that the physician is the one person in the industrial organization to whom the workers may feel inclined to go with their troubles. Because of this feeling toward them, doctors have opportunities to help employees as no employers can, and chances to gain for the latter the goodwill they so much desire and find is otherwise difficult to obtain.

"15. [*By*] *the encouragement of thrift, domesticity, morality, and sobriety.*—These qualities tend to prevent the occurrence of social and financial problems among the workers; and their absence often leads to problems of health."

RELATIONS OF MEDICAL DEPARTMENTS TO INDUSTRIAL ORGANIZATIONS

The physician in an industrial plant derives his authority from any one of a large number of sources. The various departments to which physicians were attached in the plants investigated are tabulated by the author as follows:

Production (superintendent or works manager, director of production)	71
Compensation (legal, compensation, or claims departments, treasurer, secretary-treasurer, auditor, clerks)	36
Administration (president, general manager, director of plant administration)	31
Labor relations (director of welfare, employment manager, service department, relief department, industrial service manager, paymaster, employment and welfare manager, safety, compensation and hospital department, relief, surgery, and employment department, and department of industrial relations)	28
Miscellaneous (office manager, safety department, and engineer)	4

"Two instances were noted of doctors who gradually expanded their activities until one is now in charge of an employees' service department, his own creation, and the other is directing an employment department, so called, which has the duties of a service or welfare department, also of his creation.

"It appears that 42 per cent. of the medical departments visited are responsible to officers who have supervision over production, 21 per cent. to officers who compensate for injuries, 18 per cent. to administrative officers, and 15 per cent. to those who direct employment and labor relations.

"The position a medical department should occupy in an industrial organization would seem to depend upon the purpose for which it is used. If the purpose is to facilitate production, it should be responsible to the superintendent or such other officer as has direct charge of production. If the medical service is mainly expected to reduce claims for compensation, it should derive its authority from the officer who handles the claims. If the object is to assist in stabilizing the laboring forces, it should be answerable to the officer whose duty that is. If the purpose of the medical department is broad and includes activities that concern several or all of the functions which are necessary to manufacturing, it should be accountable to the directing head only."

Tables are given, showing the provisions made for medical service in the plants visited, arranged in groups according to the number of employees engaged in the plant, from 500 to 10,000. Each table is analyzed separately.

"In reviewing these tables for the purpose of definitely answering the questions that inspired the making of the analyses, the dominant impression is that standards of neither time nor personnel can be fixed. . . . The work that the doctors or their departments do is the real determining factor. As part-time service is, with few exceptions, limited service, employers who wish their working people to have the benefits of unlimited medical attention must engage physicians capable of rendering or directing such and must give them time and opportunities to do so, leaving the determination of the conditions under which they may work largely to the doctors themselves."

THE SELECTION OF INDUSTRIAL PHYSICIANS

"Beyond the fact that industrial medical departments may or should consist of doctors, attendants, and clerks, personnel is also far from being standardized. The probable reason is that industrial medical service itself is not yet standardized, an opinion which is supported by the variance in the activities of the doctors of the different establishments. The treatment of trivial injuries, for instance, is the only one that is common to all. If that were the extent of industrial medical service, standards of personnel could possibly be fixed, with the accident frequency and severity rates as the basis. But there are other activities, and the more of them a medical department undertakes the larger the personnel must be. Even so, other factors enter into the problem. Consider physical examination of new employees for illustration. Here the number of doctors depends upon the thoroughness of their examinations, their ability to systematize and do the work rapidly, and the labor turnover,

which varies greatly in different establishments. Personnel depends then, chiefly upon the abilities of the doctors to create demands for the services of their departments and their capacities to organize and direct their departments in the service of these demands.

"The final conclusion in this, as also in the attempt to fix time standards, is that employers must engage capable physicians and allow them to secure assistants in such number and variety as they may deem necessary properly to carry on their work. If employers do not feel that they can leave these decisions to their doctors they may be assured that they have engaged the wrong physicians.

"When choosing physicians employers should exercise the same care they use in selecting men for other important positions in their executive organizations, and under no circumstances should they assume that physicians, because they are physicians, are thereby qualified to direct industrial medical departments. . . . Nor should they expect obstetricians, general practitioners, or even surgeons to make good in industrial medicine unless they have adaptability, latent capacity of administration, and plenty of time and opportunities to orient themselves.

"Employers should consider that two types of mind are needed for industrial medical service—one capable of expressing policies and able to organize the staff and direct the work, the other competent in details and qualified to do the routine. . . . Being trained in details, which the practice of medicine essentially is, physicians are apt to be of the latter type. . . . If the qualities that make a good executive are inherent in them, those qualities are likely to have been stifled; at any rate, medical training and experience do not tend to their development.

"To be sure, some physicians are endowed with administrative capacity which refuses to be stifled. By surrounding themselves with skillful assistants and directing their efforts wisely they become successful and usually prominent in their profession. This is the kind of physician that is most able to direct industrial medical departments, and employers would do well to select this type when in need of the services of chief physicians. . . . . It may be well for physicians first entering industrial medicine to visit several well-known industrial clinics to study existing practices, and certainly, before being expected to take charge, they should have time to familiarize themselves with their own establishments.

"To secure competent physicians for places where only one doctor is needed, with possibly one nurse or other aid, is exceedingly difficult, as the duties are such as to require the exercise of initiative as well as attention to the details of routine work, including the keeping of records and the making of reports, matters in which doctors are notoriously neglectful. . . .

"It is best to secure for these positions, if possible, doctors who have acted as assistants in established industrial medical departments and, while there, have shown talent for management. This also applies to the choice of chief physicians for those departments in which the executives are expected to do part of the routine work, the size of the establishments necessitating the employment of several doctors but not justifying the devotion of one man's whole time to administration.

"Parenthetically it may be suggested that the development of industrial medicine may be furthered by the affiliation of medical colleges with competent industrial medical departments, in order that graduates who incline to industrial work may secure actual training and experience in that direction as a part of the intern period.

"There will be places for routine workers in the medical service of industry, but their opportunities for employment must be limited chiefly to large medical departments and to association with physicians who provide medical service to numbers of small establishments. . . .

"In its formative stage, industrial medicine was purely an emergency service. Trivial injuries were either ignored or treated by fellow workmen. Others were sent to hospitals or the offices of physicians. . . . This plan, which is still in vogue in 14 per cent. of the establishments studied, has certain disadvantages, relating chiefly to lost time, which are as follows:

"1. The untreated or poorly treated trivial injuries are prone to develop infections resulting in prolonged incapacity and more or less permanent deformity.

"2. The time elapsing between the occurrence of serious accidents and the proper treatment of the injuries is frequently unnecessarily long.

"3. The time required for trips to doctors' offices in non-incapacitating injuries is time lost to industry.

"4. Employees who must go to the doctors' offices for redressings are inclined to lay off from work so long as dressings are necessary.

"5. The physicians are not close enough to the industries to realize the cost of lost time, and are therefore inclined to let the injured employees themselves fix their disability periods.

"6. The physicians cannot be of much assistance in fitting partially incapacitated employees for work which they may be capable of doing."

In some establishments dispensaries are provided, under the charge of a nurse, for the treatment of minor surgical injuries and medical ailments. This may be apparently more economical than having a full-time doctor, but the care of small injuries is but a small part of the usefulness of the industrial physician. Moreover, a legal question arises: are not these unlicensed attendants practicing medicine?

The decision between a whole-time physician or a part-time one is often difficult. The chief advantage of the part-time doctor seems to be that he is constantly in contact with his private practice, and so is, perhaps, a broader medical man. On the other hand, his mind is more likely to be divided between his work at the plant and his office practice. The scope of medical service rendered by full-time physicians seems almost always to be broader than that given by part-time men in the plants studied. Sixty-five per cent. of the doctors employed devote all their time to the work of the plant.

The difficulties of estimating the income of industrial physicians were numerous. It was almost always a matter of individual bargaining, ap-

parently, and the agreements were of various sorts. On the whole, the physicians rendering service only on request are paid better proportionately than those who are in regular attendance, and part-time physicians receive more proportionately than whole-time, perhaps because they are ready to accept less for a permanent, steady position; or because they are doing work which the employer regards as on a parity with that of a nurse—and too often the employer is right; the physician is no more than a "finger-wrapper," and does no constructive medical work.

Assistants.—The most common medical attendants, other than doctors, are female nurses. Occasionally a male attendant is found, but he is usually a clerk or a janitor who has picked up the elements of first-aid and nursing. Other departments of the factory are occasionally made use of in preparing supplies. In one establishment, for instance, the chemical department makes up Dakin's solution as required, at a considerable saving.

The industrial nurse often conducts classes in hygiene, or keeps the records and does other parts of the medical work for which she is qualified. In some localities, the nurses also visit employees who are absent on account of sickness, and sometimes all absentees; but this practice, unless carried on with the greatest tact, often results in a feeling of distrust toward the medical department.

Thus the question of assistants is an important one, for when properly chosen they enable a physician to extend his efforts much further than he would otherwise be able to do.

Special Practitioners.—"Obviously industrial physicians are no more able than other physicians to practice competently all of the specialties of medicine, so they are coming more and more to supplement their own work with that of the special practitioners. Ordinarily they refer their patients who require unusual treatments to the specialists, but in some establishments where the demands warrant it specialists have been attached to the dispensary staffs.

"The medical organization of one concern, for example, has a nose, ear, and throat man, an oculist, and a dentist; also a chiropodist; all are employed on a part-time basis. A large automobile company has a surgeon, an oculist, a roentgenologist, and a bacteriologist; also a pharmacist and a masseur. One firm manufacturing cash registers uses hydrotherapy, heliotherapy, and massage to a considerable extent, and has an attendant skilled in these practices. The medical department of a large shipbuilding company, where foreign bodies on the eye are common, engages an oculist for two hours each afternoon. The dispensary staff of a large steel company in Philadelphia includes an oculist who puts in three afternoons weekly, while one of the regular staff physicians is skilled in roentgenology.

"Dentistry . . . is relatively new to the industries, although popular and bidding energetically for general recognition. Thirteen of the 155 medical departments previously analyzed for personnel have dental service. . . .

"The volume of work which three dentists accomplished in 1917 for a large rubber company employing about 15,000 employees is astonishing. They examined the teeth of 20,562 applicants for employment and attended 6073 patients. . . . The opinion was expressed by the chief of a large industrial dental clinic that one dental unit operated from 9 a. m. to 4.30 p. m. daily is necessary for each 500 to 600 employees. In this clinic from 45 minutes to one hour is necessary for each patient, rendering prophylactic or emergency service only, and the cost per unit is $3 per hour."

INDUSTRIAL DISPENSARIES

A very full discussion of the better methods of planning and equipping dispensaries is given, with tables, photographs, diagrams, and lists of instruments and their prices, etc. A dressing room is indispensable. Waiting rooms are advisable in larger establishments, and they should be separate from the apartment in which applicants for work are received, as the sight of injured workmen has a very bad effect upon the newcomer. A small office is often provided for the doctor. Several examination rooms are advisable if applicants for employment are to be given physical examination; they need not be larger than 8 x 10 feet, which is large enough to permit distance tests of vision with the help of a mirror. The number of rooms required will, of course, depend upon the number of examinations to be made daily. An examination usually takes about ten minutes. Wards for bedridden patients are sometimes provided, although it is difficult to calculate in advance how many beds will be required. Rest rooms are best established near the medical department. Operating rooms are often found, but apparently not very often used. A laboratory is too frequently omitted.

Dental offices, X-ray rooms, dark rooms, sterilizing rooms, store rooms, attendants' rooms, and so on, may be provided to fill special needs. In the arrangement of rooms two rules stand out: the rooms which are most frequently used should be the most accessible, and arrangements should be such as to permit passage in and out without confusion.

Equipment.—The various articles of furniture and instruments are described in some detail. They need not be extensive, and the simpler forms of chairs, stands, etc., are often the most useful. An arrangement of furniture which seems to be peculiarly adapted to industrial dispensaries is the dressing unit, which consists of a stand, chairs or stools, and facilities for washing the hands. Attention to the arrangement of furniture will save many steps. Stretchers or ambulances should be provided.

ACTIVITIES OF MEDICAL DEPARTMENTS

The treatment of injuries is, of course, the first and in many plants the only purpose of the medical department. Doctors are frequently judged by the average of the disability periods of the employees. The physician should be familiar enough with the processes in which the men are engaged to be able to decide whether a man should be permitted to continue with his job, and if not, what treatment is best adapted to returning him to work as early as possible. Workmen are often

unwilling to accept lighter jobs during the period of convalescence from an injury when they are unable to do their regular work, because such jobs are usually less well paid; and it is the policy of some companies to allow injured men full pay even on light work, in order to keep them from acquiring the habit of loafing.

Not all industrial dispensaries treat major injuries. Bedridden patients are sent to neighboring hospitals in many cases for treatment, and sometimes for diagnosis.

Trivial illnesses—colds, constipation, and so on—are treated by a majority of the full-time physicians, but part-time and detached physicians often refuse to be bothered with them, or hesitate in the fear that the giving of treatments may imply liability for further care in the event of serious developments. Somewhat over 4 per cent. of the whole-time departments treat serious as well as trivial illnesses.

Laboratory medicine seems to be pretty well neglected in most plants, because of lack of time, funds, training or initiative. It might be worth while in many dispensaries to train a nurse to perform the commoner laboratory tests, as is being done at one plant.

The physical examination of applicants for work is of all degrees of completeness. In some establishments it is restricted to the men handling food; in others, to process workers; in others again to those proposing to enter the mutual benefit societies.

"Somewhat more than one-half of the establishments visited require examinations of those who seek employment—one-half had not yet seen the value of the examinations—and the moment a labor shortage appeared a few of them dropped the requirement. They also had failed to perceive the real value of the examination. This is regression, and at a time when employees and industry must put forth unusual efforts and labor under unusual conditions, a time when both need the support of all measures that are capable of protecting health and securing efficiency. As the theory of physical examinations is fundamentally right, the only logical conclusion is that the theory had not been well applied in those places where regression has occurred. The lesson which industrial physicians must learn is that of the value of thoroughness, and under no circumstances should it be sacrificed to speed or any other circumstances. There are, of course, many industrial physicians who do their work thoroughly in this respect, and who live up to the ideals of industrial medicine. . . . There is much talk about fitting workmen to their jobs, speaking from the standpoint of physical qualifications, but very little evidence of its being scientifically done. In order to do this properly and effectively, the doctors should study the physical requirements of all the various factory operations, a task to which they do not readily adapt themselves. It would appear, therefore, that if a comprehensive study were made of job requirements in the various industries, relating particularly to physical and temperamental qualifications, and the results of such a study were made available to industrial physicians, they would be in a much better position than they are now to apply the knowledge obtained by physical examinations to the proper placement of industrial workers."

Instruction in hygiene is one of the duties taken on by the medical staff of some plants. The most frequent method is by health bulletins, such as those issued by the National Safety Council. In addition, health talks are given in several establishments. Instruction in first aid is often given to men who are compelled to be out of reach of the regular medical service. The first-aid jar devised by the National Conference Board of Industrial Physicians is recommended.

Certain companies have established vacation colonies and sanatoria for their employees.

The medical staff in some instances finds it of advantage to hold periodical meetings to discuss questions brought up in the course of the work. Industrial physicians will always find it worth while to keep in close touch with the local public health authorities.

Records and reports.—There is an unfortunate lack of uniformity among different dispensaries in the matter of records. The author has selected the forms which he considers the best, and gives them in full. Blanks are given for orders for medical attention, for the passage of patients and notes of their appointments, for records of first aid and subsequent treatment, for physical examination—cursory or complete—for special diseases, as tuberculosis and occupational disease, and for dental examination and treatment.

THE VALUE OF INDUSTRIAL MEDICAL SERVICE

"The reasons which induce employers to provide their workers with medical service may be summarized as follows:

"1. It is an acknowledgment of their obligation toward the workers who sustain injuries during employment and an economical means of procuring expert attention for them.

"2. It is deemed capable of removing or minimizing certain causes of lost time.

"3. It is one of several activities that have been found to be of use in removing certain unstabilizing influences from employment, and as such can be expected to assist in holding down the labor turnover.

"4. It enables the workers to produce more.

"5. It prevents litigation and reduces compensation expense.

"6. It contributes to a sense of security among employees and promotes a feeling of goodwill toward the management.

"7. Conditions make it imperative in isolated industrial establishments."

On starting medical service.—Industrial medical service should never be begun on the basis of charity. The workers must be made to feel that it is a part of their rights, and that it should be of advantage both to themselves and to their employers. Perhaps the best way to begin is with a part-time surgical dispensary, which the workers are always willing to accept, and which may be enlarged to embrace as many of the activities open to the industrial physician as may be desired. Often, if one plant is not large enough to support an adequate medical department, it will be found of advantage for several

firms to combine in the establishment of a hospital convenient to all.

SUMMARY AND CONCLUSIONS

"1. Industrial medicine is the theory and practice of medicine applied to the prevention of sickness among industrial workers, and their prompt restoration when sickness or accidental impairment have occurred.

"2. To be effective, industrial medicine must not be limited to the care of injuries. . . .

"3. The relation of industrial physicians to plant organization should be such as to favor correlation and make for greatest efficiency. It is better that they look to the directing heads for authority, rather than to departmental heads.

"4. Whole-time medical service seems to be feasible in small establishments, and wholly desirable in large establishments. . . .

"5. The personnel which may be required to render effective service depends more upon the ability of the directing physician to create demands for the services of his department in health maintenance than upon the number of injuries which are sustained by the workers.

"6. . . . Physicians who intend going into industrial service should seek special training in that direction which will enable them to adapt their knowledge to the requirements of industrial work.

"7. A part-time physician is never wholly an industrial physician. . . .

"8. Doctors who render industrial service only upon request are better paid proportionately than those who render part-time service, and these are better paid proportionately than those who render whole-time service.

"9. Trained female nurses are in greater demand as assistants in industrial dispensaries than any other class of attendants.

"10. The evolution of industrial medicine and its growing importance is attracting specialists to the industrial field. Prophylactic dental service, an example of this specialization, is becoming deservedly popular.

"11. Industrial dispensaries should be accessible . . . The arrangement of equipment . . . should be such as to permit rapid care of patients in an orderly manner.

"12. Whole-time physicians render more varieties of service than part-time physicians. . . .

"13. While keeping records and making reports are essential to the operation of industrial medical departments, there appears to be a great variety of methods and forms used. . . .

"14. Industrial medicine is not only humane, but is essential to production. It is beneficial to workers and profitable to employers. It offers splendid advantages to physicians for the development of careers in a field of rapidly growing importance, vital with opportunities for service to humanity."

A bibliography of reprints and bulletins issued by the Public Health Service dealing with related subjects is given. These, like the present report, may be obtained free or at a nominal price from the Public Health Service, Washington, D. C.—T. J. Putnam.

INDUSTRIAL NURSING

PUBLIC HEALTH NURSING. Editorial, California State Board of Health, Month. Bull., May, 1919, 14, No. 11, 373.—The U. S. Public Health Service urges the training of more public health nurses to extend the campaign of venereal disease control. Further recommendations for training women for public health nursing are included.—L. A. Shaw.

INDUSTRIAL PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

LESSONS FROM HOUSING DEVELOPMENTS OF THE UNITED STATES HOUSING CORPORATION. *Frederick L. Olmstead.* U. S. Bur. Labor Statis., Month. Labor Rev., May, 1919, 8, No. 5, 27-38.—This article reviews briefly the conditions of hasty mobilization of labor into communities offering only limited housing facilities, with the result that through the United States Housing Corporation the government was forced to take an active part in providing houses in order to improve and stabilize labor. The housing shortage has been aggravated generally in the past few years by tendency to make investments in other lines. Aside from the emergency conditions brought about by the war, the decline of interest in housing has had a social significance in that it leads to crowding and a decrease in the permanency of residence. The writer points to the success of the Housing Corporation in producing pleasing effects in the building of groups of houses by slight variations in construction, by the proper placing of houses, and by a scientific development of new streets.—C. H. Paull.

THE WAR HOUSING PROGRAM AND ITS FUTURE. *N. Hitchcock.* Jour. Pol. Econ., April, 1919, 27, No. 4, 241-280.—The greater part of this article is a history of the housing projects carried out by the U. S. government, and a description of the administrative organization developed for this purpose. The remainder discusses the broader aspects of this experiment, and the future of industrial housing.

"The net conclusion . . . is that as a national experiment the government war housing program cannot yet be said to have demonstrated anything. It has not had time. But the nation, if it wishes, still has the opportunity to ascertain

its real value. There are two possible courses open to the government: it can adopt the *laissez faire* method of disposing of its property at the first opportunity to the highest private bidder, seeking only the largest possible amount of immediate salvage; or it can hold it until a far-sighted policy can be worked out. . . ."

The author feels the "necessity for a survey of the whole situation by a competent agency with a view to planning and recommending a comprehensive national scheme for handling the whole problem. . . . The logical suggestion seems the establishment of a federal housing commission, composed of experts, some of whom at least have assisted in the war construction program."—Linda James.

THE WORK OF THE RECONSTRUCTION LEGISLATURES. *F. Rex* and *Richard S. Childs.* Nat. Munic. Rev., July, 1919, 8, No. 5, 366-378.—Action taken by many legislatures and cities, in regard to improvement of housing facilities for the working man, is reviewed on page 367. Illinois, Texas, North Dakota, Boston and New York are mentioned particularly.—Linda James.

INDUSTRIAL MANAGEMENT IN ITS HEALTH RELATIONS: SPECIAL TESTS IN THE SELECTION OF EMPLOYEES

CONVENTION OF EMPLOYMENT MANAGERS. Ind. Management, June, 1919, 57, No. 6, 489-491.—An account of the convention of the National Association of Employment Managers held in Cleveland, May 21 and 22. This report contains papers on *Training and Placing the Disabled* by W. A. Sawyer, *Safety as the Employment Executive Should See It* by Sidney J. Williams, *Human Relations Department from the Standpoint of the Industrial Physician* by Dr. Otto P. Geier, *Human Relations and the Industrial Physician* by Robert S. Quimby.—C. H. Paull.

A CLASSIFICATION OF EMPLOYMENT MANAGEMENT FUNCTIONS. *Roy W. Kelly.* Ind. Management, June, 1919, 57, No. 6, 476-477.—The author tabulates the duties of the employment manager under the headings of Recruiting, Developing the Sources and Channels of Labor Supply, Adjustments, Training, General Education, Group Relations, Co-operative and Service Activities, Health and Safety, Records and Research.—T. J. Putnam.

PRINCIPLES OF EMPLOYING LABOR. *E. H. Fish.* Ind. Management, June, 1919, 57, No. 6, 478-482.—In this discussion, the last of a valuable series of five, which started in the February number, Mr. Fish suggests a number of "non-financial reasons for quitting" which are related to safety and health in industry. He points out the danger of confusing safety appliances and safety practices. Employers ought never to allow themselves to be satisfied to substitute a monetary return through insurance to take the place of the most adequate safety precautions possible. Unsanitary and disagreeable working conditions not only tend to increase labor turnover, but also to lower the standard type of labor available. The prospect of employment during the entire working life rather than to an arbitrarily established age limit has much to do with the worker's happiness and health in his work and his consequent efficiency and permanency of employment.—C. H. Paull.

TRAINING AND PLACING THE DISABLED. *W. A. Sawyer.* Ind. Management, June, 1919, 57, No. 6, 494-495.—Every year for the past fifty years we have had a far greater number of disabled men from industry than the total list of our casualties from the war. We need more measures for prevention and for rehabilitation. The disabled worker should be re-employed, not as a charity, but on a footing with other workers. This is made possible in almost every instance by careful job-analysis.—T. J. Putnam.

TESTS OF INTELLIGENCE: RELIABILITY, SIGNIFICANCE, SUSCEPTIBILITY TO SPECIAL TRAINING AND ADAPTATION TO THE GENERAL NATURE OF THE TASK. *E. L. Thorndike.* School and Society, Feb. 15, 1919, 9, No. 216, 189-195.

THE VALUE OF THE INTELLIGENCE QUOTIENT FOR INDIVIDUAL DIAGNOSIS. *J. E. W. Wallin.* The Journal of Delinquency, May, 1919, 4, No. 3,109-124.

THE DIAGNOSTIC FALLIBILITY OF INTELLIGENCE RATIOS. *F. Mateer.* Pedagogical Seminary, Dec., 1918, 24, No. 4, 369-392.—This and the above two papers may well be read in conjunction with one another. The first paper contains especially a consideration of the dangers of error and misapplication in making intelligence tests in colleges, business institutions and the like where coaching may be possible, and several practical methods of overcoming the possibility of coaching are mentioned. The other articles are reports of critical studies of the value of intelligence ratios, and are in agreement in attempting to show the limitations of the mathematical formula and the need of taking into consideration clinical and other aspects of individual cases. The results of these studies cannot be presented in brief summary, since the methods employed and the values in question can be understood only by being precisely defined and considered in detail.—G. E. Partridge.

INTELLIGENCE AND EFFICIENCY TESTS DISTINGUISHED. *A. L. Ide.* The Psychological Clinic, May 15, 1919, 12, Nos. 5-9, 204-209.—There are two classes of tests: those of capacity, and those of accomplishment. The intelligence test attempts to measure mental unitary powers, the efficiency test tries to measure the results of combined powers.—G. E. Partridge.

WAR PSYCHOLOGY AND EDUCATION. *E. K. Strong.* School and Society, June 14, 1919, 9, No. 233, 697-705.—The war has brought out the

necessity of dealing with the whole problem of personnel more effectively. Men must be trained for the positions in which they can accomplish most for society and attain the greatest happiness. Classification can be accomplished by the use of intelligence tests, trade tests, rating scales and expert interviewing. Definite specifications of the various lines of work are as necessary as definite analysis of the worker, for the proper assigning of one to the other. Vocational guidance can thus be carried out scientifically, and it should be introduced and perfected throughout our whole educational system in connection with a system of efficient public employment offices in our industrial concerns. The problem of morale should be studied, since making a man happy in his work is quite as important as teaching the work itself.—G. E. Partridge.

THE WORK OF THE TELEPHONE OPERATOR. *J. Fontègne* and *E. Solari.* Archives de psychologie, 1918, 17, No. 66, 81-130.—This is an excellent and typical study of vocational psychology. The author believes that occupational orientation is one of the most pressing of our educational and economic problems, and that the methods of psychology in a broad sense must be applied to the work of analyzing the individual and work. The present study was undertaken to determine the factors of efficiency in the work of telephone operators, and upon this basis to devise a practical test of such efficiency that might be applied to applicants. Primary memory, ordered memory, ability to estimate spatial relations, quickness of movement, precision of movement were studied, and the results compared with estimates of efficiency based upon work. Good auditory memory for numbers, power of sustained attention, quickness of movement, quick reaction to visual stimuli were found to be the essential qualifications that must be measured.—G. E. Partridge.

WORKMEN'S COMPENSATION AND INSURANCE

MEDICAL BENEFITS AND THE MEDICAL PROFESSION UNDER WORKMEN'S COMPENSATION LAWS. *Carl Hookstadt.* U. S. Bur. Labor Statis., Month. Labor Rev., May, 1919, 8, No. 5, 39-61.—In this article the writer reviews the forty-two workmen's compensation laws effective in the United States on January 1, 1919, from the standpoint of medical service provided and the administration of this service. The amount of medical aid ranges in cost from $25 to $250. In some states there is no time provision for medical treatment, while in others the time is unlimited. In less than one-half of the states the employer is required to provide medical service for more than 30 days. The inadequacy of most of these provisions from the standpoint of the worker is shown in tables which give the periods of disability for several states. Compensation laws vary in placing the responsibility for the selection of the physician. The writer points out that the selection of the physician by the employer tends to protect ignorant workers against unscrupulous doctors. On the other hand, workers feel that they have the right to make the selection of a doctor. In some cases, the industry has failed to make a wise selection, and at times there is danger that physicians working for a reduced fee for an industry will do superficial work. The writer discusses the various plans followed in different states for establishing rates for physicians and hospitals in the treatment of industrial cases. In conclusion he calls attention to the scheme adopted in the state of Washington for administering medical service through local boards.—C. H. Paull.

SELECTION OF THE PHYSICIAN UNDER COMPENSATION LAWS. *J. W. Mowell.* U. S. Bur. Labor Statis., Month. Labor Rev., May, 1919, 8, No. 5, 248-250.—This is a paper which the writer presented at the Fifth Annual Meeting of the International Association of Industrial Accident Boards and Commissions. He discusses three phases of the subject from the standpoint of the compensation law of the state of Washington:

1. The choice of a physician by the injured worker.
2. The selection of a physician by the employer, after securing consent of the worker.
3. The selection of the physician for special work by the industrial insurance commission.—C. H. Paull.

REHABILITATION OF DISABLED EMPLOYEES

HELPING THE WOUNDED SOLDIER TO "COME BACK." *B. T. Baldwin.* Mod. Hosp., May, 1919, 12, No. 5, 370-374.—A detailed statement of the development of occupational therapy in the Walter Reed General Hospital.—C. K. Drinker.

REHABILITATION THROUGH SYSTEMATIC EXERCISE. *A. F. Gugel.* Mod. Hosp., May, 1919, 12, No. 5, 322-324.—A very general article on the above subject. No details are given as to the character of the systematic exercise.—C. K. Drinker.

REHABILITATION OF THE DISABLED. *Frank Billings.* Jour. Am. Med. Assn., May 24, 1919, 72, No. 21, 1505-1513.—This article first summarizes governmental work for those disabled in the war. In Part II there is a discussion of the rehabilitation of the industrially disabled.

Seven hundred and fifty thousand people in eighteen of the states in this country are injured annually in industrial occupations; 35,000 of these are permanently disabled. It has also been stated that 80,000 people are permanently disabled annually in the whole United States through acci-

dents received in industrial occupations. Of these it is stated that 2000 are totally disabled. At the present time, little effectual work is being done towards the rehabilitation of this enormous group of workers.

The cost of rehabilitation should be borne in proper ratio by the federal, state, county and municipal governments and the corporations employing labor. All institutions now giving treatment and care to injured men should be properly equipped for efficient physiotherapy. After passing through the earlier stages of recovery the patient should be placed in a well-organized vocational training school and prepared for his old or for a new job. When rehabilitation is impossible just pensions should be given.—Katherine R. Drinker.

RE-EDUCATING THE DISABLED MAN. *John C. Faries.* Am. Jour. Care Cripples, Jan., 1919, 8, No. 1, 3-10.—The Red Cross Institute in New York has established a "curative workshop" in connection with the hospital to teach a disabled man during convalescence some trade, preferably one allied to his former work, in order to return him more quickly to the community as a self-supporting individual. Handicapped men are not coddled, but are stimulated by encouragement and instruction to self-help. Disabled plasterers, for example, are trained to be foremen and estimators; disabled men without trades are taught to become oxy-acetylene welders, motion-picture operators, mechanical draughtsmen; in many cases with increased earning capacity.

To support disabled men and their families during the period of training, the Institute makes small weekly loans to the men, or procures for them part-time employment, a partial but not completely satisfactory solution of the problem. —Rhea Fuller.

THE BANKHEAD-SMITH BILL: A MEASURE TO PROMOTE THE VOCATIONAL REHABILITATION OF DISABLED CIVILIANS. Am. Jour. Care Cripples, Jan., 1919, 8, No. 1, 63-64.—A bill for promoting the vocational rehabilitation of the disabled.—Rhea Fuller.

TESTIMONY ON THE BANKHEAD-SMITH BILL. *Douglas C. McMurtrie.* Am. Jour. Care Cripples, Jan., 1919, 8, No. 1, 65-69.—Mr. McMurtrie considers that best results are obtained in special schools for the disabled, with a special staff of workers trained for the requirements of the work. In the Red Cross Institute a variety of courses are offered free, and yet it has but forty of the thousands of crippled men in New York City. The solution seems to rest with the state compensation authorities. Rehabilitation and compensation should go hand in hand, instead of the former discouraging the latter. Until pensions are paid for personal injury only, it will be difficult to persuade the crippled to take up re-education.

To extend the work, bureaus for the handicapped should be established in every large city. Many men need only vocational guidance and intelligent search for a suitable job.—Rhea Fuller.

VICTORY OVER BLINDNESS. *Arthur Pearson.* Am. Jour. Care Cripples, April, 1919, 8, No. 4, 299-309.—A description of St. Dunstan's in London, with 16 acres of land attached, resembling an industrial village and organized for the special activities of the blind. The patient is imbued with the spirit of fight rather than that of resignation. He must not consider himself afflicted, but only faced by the necessity of readjusting his faculties to the altered conditions of his life. He is taught reading, typewriting, shorthand, massage, carpentry, weaving, basket-making, the care of poultry, etc., with the result that the great majority of the men who leave St. Dunstan's make more money than they did when they could see. With the object of keeping men in a normal state of mind, play is considered quite as important as work. Dancing, cards, checkers, rowing, swimming, etc., are heartily enjoyed. Teachers who are themselves blind are considered a great asset because it gives the pupils confidence in themselves. When a man leaves St. Dunstan's, he passes into the charge of the after-care department, which has regular visitors to visit the man in his home in case he is not in outside employment. Whenever possible, however, the man is returned to his original occupation.—L. A. Shaw.

ST DUNSTAN'S AND THE BLINDED SOLDIER. *Frederick Martin.* Am. Jour. Care Cripples, April, 1919, 8, No. 4, 314-321.—The subject matter of this article is covered in "Victory Over Blindness," abstracted above.—L. A. Shaw.

ABSTRACT *of the* LITERATURE

OF

INDUSTRIAL HYGIENE

VOLUME I | OCTOBER, 1919 | NUMBER 6

CONTENTS

	PAGE
General	83
Systemic Occupational Diseases: Occurrence, Treatment and Prevention	87
Poisonous Hazards and Their Effects: Gases, Chemicals, etc.	87
Occupational Infectious Diseases: Occurrence, Treatment and Prevention	88
Occurrence and Prevention of Industrial Accidents	90
Industrial Surgery	91
Fatigue and Occupational Neuroses	92
Hazards of Compressed Air, Diminished Pressure, Generation and Use of Electricity, and Electrical Welding	93
Women and Children in Industry	94
Industrial Sanitation: Illumination, Ventilation, Heating, Water Supply, Sewage Disposal	95
Industrial, Personal, and Community Hygiene: Housing, etc.	96
Industrial Investigations and Surveys	96
Industrial Management in Its Health Relations: Special Tests in the Selection of Employees	96
Industrial Health Legislation and Court Decisions: Malingering	97
Industrial Mortality and Morbidity Statistics.	98

GENERAL

GREAT BRITAIN, ANN. REP. CHIEF INSPECT. FACTORIES AND WORKSHOPS FOR 1916. Parliamentary Paper, Cd. 8570, 1917, 1-4.—During the past year there was a large extension of munition works, and important developments took place in the manufacture of explosives, chemicals, glass, hosiery, needles and other articles previously imported. This report, like the last, deals largely with the special duties enforced by the war. The medical inspectors were actively engaged in the investigation and prevention of "dope-poisoning" incident to the varnishing of aeroplane wings; a new "dope" has been introduced which is free from the poisonous tetrachlorethane. Study was also made of the poisonous materials entering the manufacture of explosives, especially T.N.T. Very satisfactory results have been obtained in reducing the number of fatal cases of T.N.T. poisoning. Cases of anthrax have increased, owing to the necessarily indiscriminate use of wool of inferior quality.

The Miscellaneous Provisions Act of 1916 contains two clauses affecting the work of the Factory Department. One makes it no longer necessary for the occupier of a factory to report accidents to the surgeon. The latter is only called upon to investigate those cases referred to him by the district (factory) inspector in pursuance of instructions issued by the Secretary of State under the act. The other clause empowers the Secretary of State to require by order in any factory or in any class of factories certain "welfare" provisions for the well-being of the workers. The need for welfare provisions is now legally recognized. This whole question became more prominent because of the great increase in

the number of women employed in factories during the war. In many of the large munition works excellent provision has been made for the health, comfort and social welfare of the employees. Most of the inspectors comment upon the improvements in working conditions in factories, especially where women have been introduced; and in many cases employers have provided tea in the afternoons free of charge for those working overtime, with very beneficial results.

The most important work done during the year was in connection with the substitution of women in manufacturing industries. Trade conferences were held to consider reorganization of conditions of work so as to release men for the army. Long-standing customs in the trade and the necessity of providing suitable sanitary accommodations for women in the works in which they had not before been employed have caused difficulties, but progress has been made.

In the supervision over hours of labor, it has been found that the general tendency has been to restrict weekly hours of work to an amount very little in excess of those allowed by law, and to arrange for more elasticity in the daily limits. It has become recognized that continuous and excessive overtime very soon affects injuriously efficiency as well as the quantity and quality of work. In one weaving factory special records were kept when the normal hours of fifty-five and one-half hours a week were increased for sixteen weeks to fifty-eight, and for four weeks to sixty-five and one-half. The output did not increase in proportion and the difference was more marked when working the sixty-five and one-half-hour weeks. On the other hand, a moderate amount of overtime judiciously arranged gave satisfactory results.—B. Cohen.

INDUSTRIAL HEALTH AND EFFICIENCY. Final Report of the British Health of Munition Workers Committee. U. S. Dept. Labor, Bur. Labor Statistics, Bull. No. 249.—This most exhaustive report is a summary of all of the work of the British Health of Munition Workers Committee, and is published with the hope that it will prove of great value to the employers and workers in this country, although it represents British shop and labor experiences.

All phases of working conditions and welfare provisions have been investigated and are discussed with the result that this volume probably represents more complete, concrete and valuable experience than has previously been collected. Of special importance are those sections of the report dealing with Hours of Labor, Injuries and Accidents, Rest Periods and Working Shifts. A discussion of some 250 pages is followed by a series of conclusions and an appendix.

This report should serve as an excellent guide to plant officials and is to be highly recommended for its assistance in solving some hitherto unanswered questions regarding many of the facets of industrial life.—L. Greenburg.

THE CORRELATION OF NEUROLOGY, PSYCHIATRY AND GENERAL MEDICINE AS SCIENTIFIC AIDS TO INDUSTRIAL EFFICIENCY. *Jau D. Ball.* Am. Jour. Insanity, April, 1919, 75, No. 4, 521-555.—This is a short, rather disjointed article dealing with a big subject, but dealing with it in a helpful manner that should point the way to further work along these lines. The idea is that industry can be stabilized and an enormous reduction of labor turnover accomplished by getting at the individual workman and satisfying him individually.

"Information and groundwork for this research was gained by visits to large industrial plants, including one of the large ship-building plants on the Pacific Coast. Personal interviews were had with managers, superintendents, foremen, and men, and opportunity offered for study of individuals. Careful study was made of the methods of employing labor, not only the methods used at the individual plants, but also methods observed at United States employment offices. What particularly impressed the author was the fact that the efficiency of every plant was practically dependent upon the methods used in its employment bureau. It is the keystone to the entire arch of industry. True, at the present time this keystone is a little unstable, but by the proper co-operation of capital and labor and the realization by both of the great necessity for the proper selection and distribution of labor, it will be possible to imbed it more firmly in the cement of good fellowship and loyalty.

"The loss to many industries through the termination of individuals unsuited for a particular job, but having unascertained special abilities, is enormous. The salvage of this human material should be undertaken by a scientifically equipped employment bureau."

The first step in this program is to treat each employee as a case, and to keep a chart indicating his physical and mental equipment, with suggestions as to how he should be handled and what work he is best suited for. With these facts in hand, the employer can give each man full opportunity and receive from him maximum efficiency, thus establishing mutual confidence and co-operation.

A laboratory report is made, consisting of a general medical examination, neurological examination, psychiatrical examination, and psychological examination. Good outlines are given for each of these, and the questionnaire used in the psychiatrical test is given in full. The psychological test is one that can be applied to a group of twenty-five or more. It is adapted from that used in the Navy, and has the advantage of brevity and proved value. It is fully explained in the paper.

In his conclusion, the author pleads for the establishment of medico-psychological laboratories in all large industrial organizations, to carry out this method of putting the right man into the right job. He enumerates at length the benefits that would arise from such a scientific selection and distribution of labor. We might be sceptical about his claims if we did not keep clearly in mind the fact that he must be fundamentally correct, for he bases his work on giving individual attention to the personal problems of each employee.—S. Cobb.

SECURING THE INITIATIVE OF THE WORKMAN. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No 6, 134-136.—Robert B. Wolf believes that modern industry affords no chance for the constructive impulses in man, with the result that these impulses are turned into destructive channels. The employee must have a voice in determining working conditions. Where there are brains, they must be worked intelligently or they will be turned to evil purpose. If we wish to enlist the initiative and the intelligent interest of our workers, they must be shown the relation of their work to the finished product.—L. A. Shaw.

PLANS FOR THE HYGIENE OF THE FUTURE. *Paul Schmidt.* Deut. med. Wchnschr., April 24, 1919, 45, No. 17, 57-59.—A plea for the establishment of a general bureau of health, to preside over the usual public health activities, and in addition, over the hygiene of industry and of dwellings, the welfare of women and infants, and the measures directed against the communicable diseases, especially tuberculosis and the venereal diseases. We must not forget, as the author reminds his countrymen, "that newly-won, broader personal liberty does not give anyone the right to endanger his fellow men and society through lack of thought and carelessness in matters of health." —T. J. Putnam.

THE RELATION OF THE RAILROADS TO THE PUBLIC HEATLH. U. S. Pub. Health Ser., Pub. Health Rep., 34, No. 27, 1469-1473.—The Railroad Administration, in developing its organization, appointed a committee on health and medical relief to make a survey of the surgical and medical field, in so far as it related to the railroads. The committee found the railroads to be partly responsible for the continuance of malaria, because of the embankments which subvert the natural drainage. Inasmuch as the railroads draw a large number of employees from communities in the South where hookworm is prevalent, this disease is of vital interest to them.

The United States Railroad Administration desires to assist in carrying out all the health regulations of the United States Public Health Service and of the various states.

Water-closets and washing facilities in railroad stations and on passenger cars are unsanitary and filthy. In the case of stations, it is unjust that individuals of a community should demand better facilities than they themselves are willing to provide. The committee, however, is now drafting a set of standard sanitary rules for adoption by the railroads.

Health posters about railroad property are to be permitted only on condition that they conform to the standard established by the committee.

It is recommended that steps be taken to ascertain whether the irreducible minimum of accidents has been reached. The annual toll of 194,000 injuries seems heavy, and measures of rehabilitation, similar to those adopted by the government in salvaging disabled army men, should be carefully considered.—L. A. Shaw.

FUNCTIONS AND PLAN OF ORGANIZATION OF DIVISION OF INDUSTRIAL HYGIENE. *C. D. Selby.* Am. Jour. Pub. Health, July, 1919, 9, No. 7, 521-525.—In this paper Dr. Selby outlines the plans of the U. S. Public Health Service in co-operation with the Working Conditions Service of the Department of Labor for creating and developing a governmental agency for the protection of the health of industrial workers He points out the need of determining standards for working conditions, and emphasizes the desire to effect a friendly leadership in all matters of industrial hygiene and medicine.

In approaching this objective the division proposes: (a) to initiate and encourage researches in industrial hygiene and medicine; (b) to determine standards and aid in their promulgation; (c) to develop preventive medicine and surgery (including the medical and surgical phases of the rehabilitation of impaired workers) in the industries and the industrial zones; (d) to develop facilities for the training of physicians, sanitarians and nurses for industrial service; (e) to develop a system of industrial vital statistics; and (f) to inaugurate an active informational campaign—all to the end that the health and lives of the industrial workers may be safeguarded against the hazards of industrial service. —H. F. Smyth.

PRACTICAL INSTRUCTION IN HYGIENE IN MEDICAL SCHOOLS. *Allyre Chassevant.* Rev. d'hyg., April, 1919, 41, No. 4, 369-376.—For two years, a course has been given at the Faculté de Medecine de Paris, covering the following subjects:

1. *Industrial Hygiene:* Study of confined airs, psychrometry, proportion of carbon dioxide, tests for carbon monoxide, and for the various toxic industrial gases. Sampling of dusts and smokes. Microscopic examination of mineral, vegetable and animal dusts. Accurate sampling of air for complete chemical analysis. Sampling of dust for bacteriological examination.

2. *Hygiene of Dwellings:* Cursory examination of the common materials of construction, measure of their porosity. Examination of an architectural plan, and criticism. Air-space of a room; lighting, heating and ventilation.

3. *Personal Hygiene:* Examination of the principal textiles; measurement of their permeability to air; methods of waterproofing.

4. *Sterilization and Disinfection:* Use and action of autoclaves, incinerators, disinfecting stoves. Control of disinfection: fusion tests, bacteriological tests. Cursory analysis of the commoner chemical disinfectants.

5. *Nutritional Hygiene:* Brief notes on the fuel value of the chief foods; their composition; methods of extracting and estimating fats, carbohydrates and proteins.

Milk analysis, sampling. Content of solids and of fat. Purity. Lactodensimetry. Control of pasteurization.

Vegetable foods: microscopic examination of flours; gluten content; analysis of bread; search for rot, blight and ergot.

Animal foods: examination of meats for parasites, and for evidences of decomposition.

Controls of the sterility of canned goods.

6. *Drinking Water:* Accurate sampling of

water for chemical analysis. Source and temperature. Hydrotimetry. Tests for suspicious impurities. Interpretation of results. Fluoroscopy, electrical resistance.

7. *Waste Waters:* Sampling of sewage and of mud. Tests of putrefaction.

Lack of funds has prevented further extension of the course, but it is hoped gradually to increase its scope. The author believes that sanitarians should specialize more in the various fields of hygiene, and not try to cover too much ground.—T. J. Putnam.

EDUCATION IN INDUSTRIAL MEDICINE. *Otto P. Geier.* Modern Medicine, June, 1919, 1, No. 2, 133-136.—A plan for the establishment of a Department of Industrial Medicine and Public Health in the College of Medicine of the University of Cincinnati, to provide facilities and instruction for graduate and undergraduate medical students in industrial medicine and public health, which will be taught in co-operation with the industries and public health agencies, leading to degrees in industrial medicine and public health; and to provide for co-operation with the National Safety Council and Employment Managers' Association in arranging courses of study. As a tentative plan, the course of instruction will occupy one college year of approximately eight months, beginning October, 1919, and will be open to graduates in medicine. Part of the instruction will be given at the college, and part in the various industries. Subsequently, the students will be assigned to work in co-operation with the plant physicians, dentists, safety engineers and employment managers. Finally, each student who qualifies for the work will be assigned to some plant to serve an interneship, and from this time on it is expected that he will be remunerated for his services. A special course of lectures will be given under the supervision of the Safety Council.—T. J. Putnam.

REFERENCES FROM MONTHLY RECORD OF CURRENT EDUCATIONAL PUBLICATIONS, February, March and May, 1919.—These bulletins contain sections dealing with the current literature of education that are of interest to the student of industrial hygiene. There are sections on educational tests and measurements, school hygiene, physical training, child welfare, manual and vocational training, vocational guidance, agricultural education, commercial education, military training, re-education of war invalids. Brief abstracts of some of the papers are given.—G. E. Partridge.

EDUCATIONAL NOTES AND NEWS. School and Society, July 26, 1919, 10, No. 239, 101-106.—An Association for the Advancement of Education in Industry and Commerce has been founded in England under the presidency of Lord Leverhulme. The membership includes many of the great industrial and commercial firms of the country. The purpose is to co-operate with other educational forces and to participate in the general advancement of education. Some of the firms have founded schools in connection with their own establishments. The effort is not to be directed merely toward improvement in vocational education, since it is recognized that the problems of education of the working classes to-day are quite as much problems of leisure as of industry.—G. E. Partridge.

THE ESTABLISHMENT OF UNIT TRADE SCHOOLS IN CITIES OF TWENTY-FIVE THOUSAND OR OVER. *F. H. Wing.* National Society for Vocational Education, Bull. No. 30, June, 1919, 18-29.—"The general establishment of the unit trade school is one successful step in the solution of the problem of vocational industrial education, but even the extension to the limits of its legitimate field will leave unsolved the problems of the unskilled and semi-skilled workers. Nevertheless, the approach to the problems of industrial education through the preservation and development of suitable occupations, where these occupations obviously function, may point the way to a similar successful method of grappling with the problems of the specialized industrial worker."—G. E. Partridge.

THE GENERAL INDUSTRIAL SCHOOL FOR CITIES OF LESS THAN TWENTY-FIVE THOUSAND POPULATION. *W. P. Loomis.* National Society for Vocational Education, Bull. No. 30, June, 1919, 35-42.—"It has been demonstrated that through the medium of the general industrial school the occupational education of the boy may be followed from the time he is able to choose his occupation until he has become the finished product. He may be guided through all the stages of his development."—G. E. Partridge.

THE PART-TIME, EVENING, AND ALL-DAY VOCATIONAL SCHOOL. *J. P. Munroe.* Vocational Summary, March, 1919, 1, 10-12.—G. E. Partridge.

SOME FUNDAMENTALS FOR VOCATION TEACHERS. *K. G Smith.* Vocational Summary, February, 1919, 1, 17-19.—G. E. Partridge.

LABOR'S ATTITUDE TOWARD EDUCATION. *H. Sterling.* School and Society, Aug. 2, 1919, 10, No. 240, 128-132.—An article emphasizing the need of urging upon Congress the inauguration of a more intelligent, liberal and constructive policy in regard to education. The paper contains excerpts from the official reports of the American Federation of Labor from 1911 to 1919, showing the interest of labor in education and in the creation of a federal department of education.—G. E. Partridge.

AMERICA'S NEW PHYSICAL EDUCATION SERVICE. *Martha Candler.* The Child, July, 1919, 9, No. 10, 433-435.—At least 50 per cent. of the 25,000,000 school children of America have been shown to have defects and ailments that in some degree impede mental and physical development. The school is the logical place in which to begin the correction of the physical deterioration that has shown itself at another level in the disqualification for military service of about 30 per cent. of drafted men. Seven states have more or less adequate compulsory physical education laws, but the problem is at heart a national one, requiring federal assistance and co-ordination.

In addition to school supervision there must be attention to housing and adequate food, and there must be sane regulation of juvenile labor. Physical education is, however, the essential method of correction, and the problem of reaching adults throughout the country with a constructive physical education will be simplified when the desire for physical recreation shall have been implanted in the growing child.—G. E. Partridge.

SYSTEMIC OCCUPATIONAL DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

CENTRAL NERVOUS SYSTEM

MENTAL DISEASE IN FAMILIES. *Abraham Myerson.* Ment. Hyg., April, 1919, 3, No. 2, 230-239.—There has been much written on the inheritance of insanity, but the methods of collecting data are open to criticism. Too often the author has been trying to fit the data into a theory. Myerson studied the family history of 16,000 patients admitted to a state hospital during a period of sixty-two years; thus the descendants of the insane could be looked up—a more valuable procedure than simply asking for a history of antecedent insanity. He agrees with the students of the subject that: (1) There is far more insanity in the families of the insane than in normal families, especially in a direct line through parents and grandparents; (2) Insane uncles and aunts occur about as frequently in the families of the sane as in those of the insane; (3) Nervous disease (presumably in its strict sense meaning neurological conditions), senile dementia and apoplexy occur as frequently in the families of the sane as in those of the insane.

The marriage rate of patients who later develop alcoholic insanity is low, as is that of those who develop dementia præcox. In other words, "whatever is back of dementia præcox, it operates against self-perpetuation." Mental disease tends to appear at an earlier age in each succeeding generation—another conservative mechanism. The types of insanity inherited are usually similar to the disease of the ancestor: dementia præcox follows paranoid psychoses and dementia præcox; manic-depressive follows manic-depressive, although dementia præcox is often found; dementia præcox usually follows involutional psychoses; feeble-mindedness often follows dementia præcox. In short, like follows like, but "all roads seem to lead to dementia præcox and from thence to imbecility."

In relation to other factors, it was found that insanity tends more to low-grade mentality and feeble-mindedness than it does to genius and talent. Criminality was an inconspicuous feature in the families studied, and it is the author's belief that criminality stands in closer relationship to forms of feeble-mindedness and alcoholism than it does to insanity.—S. Cobb.

MENTAL DISORDER CONSIDERED AS A PSYCHOLOGICAL REACTION. *Milton A. Harrington.* Ment. Hyg., April, 1919, 3, No. 2, 220-229.—Abnormal mental reactions are the product of (1) difficult situations, plus (2) personality defects. Psychogenic disorders are simply the reactions of human beings to situations in which they are placed, and as both the situation and the personality are infinitely variable, the types of mental disorders cannot be classified arbitrarily into a few main diseases as is done at present by most psychiatrists.—S. Cobb.

THE PSYCHIATRIC THREAD RUNNING THROUGH ALL SOCIAL CASE-WORK. *Mary C. Jarrett.* Ment. Hyg., April, 1919, 3, No. 2, 210-219.—This is a paper by a social worker of wide experience in the psychiatric field, and her figures showing that from 17.5 per cent. to 50 per cent. of all social service cases have distinct psychiatric problems must be taken as most significant. In practically 100 per cent. of all cases, the point of view that psychiatry can give the social worker in understanding human nature is important in the handling of the many types of personality encountered. The author cites the case of a man shown at a clinic given for employment managers who thought the patient was "just like everybody else." As a matter of fact, he showed temperamental difficulties of a well-recognized psychopathic nature and was helped by treatment. The attitude of mind which allows one to look upon all anti-social behavior as interesting symptoms of mental pathology not only saves the worker from the wasteful emotions of annoyance and indignation, but salvages many cases that might have been impatiently dismissed.—S. Cobb.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

GAS WARFARE—ITS AFTERMATH. *Joseph Catton.* Mil. Surgeon, July, 1919, 45, No. 1, 65-74.—Although the aftermath of gas warfare is varied, it seems to be an expression of pathological physiology which may be more marked in one or another organ or system. It seems to depend primarily on deficient oxidation in the body. The conditions most likely to present themselves some time after gassing are:

1. Neuro-circulatory asthenia or effort syndrome. "In gas cases this group of symptoms seems to be due to disturbances in the cardiac, respiratory and vasomotor reflexes which, in addition to their other functions, are essential to the oxidative processes."
2. Conditions in the respiratory system, such as laryngitis, aphonia (functional), chronic bronchitis or emphysema.

3. Nervous and mental disturbances.
4. Pigmentation and scars from burns.

The relation of gassing to tuberculosis has not been investigated. It is quite possible that there does exist a relation between it and some gastro-intestinal disturbances and nephritis.—H. A. Bulger.

PRESENT IDEAS OF CARBON MONOXIDE POISONING. *V. Balthazard.* Bull. de l'Acad. de méd., April 8, 1919, 41, No. 14, 439-441.—The author believes that the visceral degenerations reported in carbon monoxide poisoning are artifacts, and that all the other manifestations can best be explained as a result of oxygen starvation. Thus, a concentration of 1:500 of carbon monoxide is not fatal except after a long time, while higher concentrations are rapidly fatal. The canary dies in an atmosphere of 1:350, where a guinea-pig lives for a long time, indicating that the rapidity of the circulation is a factor in susceptibility to poisoning.—T. J. Putnam.

ON A METHOD OF DETECTING CARBON MONOXIDE. *A. Desgrez* and *A. Labat.* Bull. de l'Acad. de méd., June 3, 1919, 81, No. 22, 764.—Potain and Drouin showed in 1898 that carbon monoxide produced reduced palladium in a solution of acidified palladium chloride. The authors suggest that a large sheet of unsized paper should be dipped in a 1 per cent. solution of neutral palladium chloride, and dried in a dark place. Strips cut from it are to be partly dipped in water, and suspended in a chamber which is to be filled with the air to be tested through a tube containing lead acetate, to remove any sulphuretted hydrogen. If carbon monoxide is present in amounts from 1:3000 to 1:1000, the moistened part of the paper turns a distinct gray in five to six minutes. The darkening proceeds more rapidly in higher concentrations.—T. J. Putnam.

VITIATION OF GARAGE AIR BY AUTOMOBILE EXHAUST GASES. *G. A. Burrell* and *A. W. Gauger.* U. S. Bur. Mines, Tech. Paper No. 216, April, 1919.—Sufficient carbon monoxide may be produced by automobile engines to render the air of garages poisonous. This is particularly true of the small private garage which is poorly ventilated in winter. Tests made of the concentration of carbon monoxide present indicated as high as 3.2 per cent. after 35 minutes of running and 1.98 after 10 minutes. The extremely poisonous nature of such an atmosphere is evident from the fact that a few breaths of air with a concentration of 1.0 per cent. of carbon monoxide will cause collapse. The limits of gasoline vapor concentration are narrow. An engine running idle produces more carbon monoxide than when under a load; a retardation of the exploding spark, and the imperfect carburation of "warming up," all tend to render the small closed garage a serious danger.—H. W. Haggard.

ON THE IMPORTANCE OF DE-IONIZATION IN THE TREATMENT OF PLUMBISM IN QUEENSLAND CHILDREN. *J. Lockhart Gibson.* The Medical Journal of Australia, April 5, 1919, 1, No. 14, 272-274.—A report of several cases of lead poisoning in children, treated successfully by Jones' method of electric baths, as described by Oliver (Lancet, Aug. 23, 1913, 2, No. 4695, 527). Both the patient's feet are placed upon a metal plate, and 20-40 milliamperes of a current of 7-16 volts are passed through his body, causing a deposition of lead upon the negative pole. All the cases reported were much improved clinically.—T. J. Putnam.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

SOME UNPROTECTED ROUTES OF INFECTION. *George A. Soper.* Mil. Surgeon, May, 1919, 44, No. 5, 469-473.—Although much has been done to guard the soldier from infection, some routes of danger still remain unprotected against which he must protect himself. The infections considered are those of a respiratory type. Three main routes of infection are discussed: (1) Point-blank infection. This occurs when men talk to one another at too close range. As a measure of safety, one should step back or to one side when talking with a too earnest person, or, if possible, should speak over his neighbor's shoulder. (2) Medium-range infection. Here infectious matter is distributed throughout the atmosphere as a result of coughing, sneezing, or such thoughtless acts as the shaking of handkerchiefs. (3) Long-range infection. In this route infectious material spreads by means of articles handled by infected persons, coughed or sneezed upon by them, and subsequently handled by persons who are susceptible. The greatest danger here lies in the hands.—H. A. Bulger.

PNEUMONIA AND ITS PREVENTION. Wisconsin State Board of Health Bulletin, Jan.-Mar., 1919, 3, No. 5, 6-7.—Pneumonia must be classed among the infectious diseases. Owing to the high mortality rate, proper precautions must be observed in order to prevent initial break-down as well as to avoid infection from those already sick. The disease is more apt to break out in those who have become fatigued or whose state of health is low. It is believed that by observing the advice given here the number of pneumonia cases may be reduced and the mortality of the disease diminished.—L. A. Shaw.

ON THE SPECIAL HAZARD FROM CERTAIN OCCUPATIONS FOR THE SPREAD OF TUBERCULOSIS. Med. Klinik, 1917, 684; Centralbl. f. Bakt., 1te Abt., Referate, 68, 85, 1919.—Nurse-girls, domestics, teachers, school janitors and persons employed in food-manufacturing establishments can be especially dangerous as vectors in the spread of tuberculosis. They must, therefore, when possible, be caused to change their occupations. For

controlling this phase, regulations and laws are obviously necessary.—B. Cohen.

A NOTE ON THE EPIDEMIOLOGY OF INFLUENZA AMONG WORKERS. *A. Gregor.* Brit. Med. Jour., Mar. 1, 1919, No. 3035, 242.—There is a widespread belief that workers in fumes are immune from nasal catarrh and respiratory diseases in general. To test the truth of this, the author investigated nine gasworks, a cordite factory, and a tin mine. He tabulates his findings as follows:

Percentage Summary of Case Incidence	
Navy	40.0
Army	20.0
Cordite workers not in fumes	30.1
Cordite workers in fumes	4.7
Gas workers	6.7
Tin mine workers not in fumes (one epidemic)	60.8
Tin mine workers in fumes (one epidemic)	11.1

—T. J. Putnam.

THE EPIDEMIOLOGY OF INFLUENZA AMONG WORKERS. *E. J. Ball.* Brit. Med. Jour., Mar. 22, 1919, No. 3038, 358.—Consumption is practically unknown among copper smelters. In the old open-top iron blast furnaces, the men who worked at the top frequently got consumption, but not the tappers at the bottom. The author suggests that it is the sulphocyanide, not the sulphurous fumes, which produce the phenomenon, and suggests their therapeutic use.—T. J. Putnam.

INFLUENZA AMONG POISON GAS WORKERS. *Frank Shufflebotham.* Brit. Med. Jour., April 19, 1919, No. 3042, 478.—"The information with regard to influenza among poison gas workers has been collected from twenty different sources in different parts of the country; it all points in the same direction—that, with the exception of phosgene gas, workers engaged in the production of other poison gases have enjoyed a high degree of immunity from influenza infection. It is agreed, on the other hand, that phosgene workers are particularly susceptible to influenza, and that the disease, when contracted, assumes a serious course." The factories investigated manufactured chiefly sulphuretted hydrogen, chloro-picrin, chlorine, mustard gas, and phosgene.—T. J. Putnam.

A REPORT UPON THE USE OF ATROPINE AS A DIAGNOSTIC AGENT IN TYPHOID INFECTIONS. *H. Fairley Marris.* National Health Insurance Medical Research Committee, Special Report Series, No. 9, H. M. Stationery Office, London, 1917, pp. 50.—The author recommends the subcutaneous injection of 1/33 grain of atropine in patients suspected of having typhoid or paratyphoid fever, the pulse rate being counted by minutes for ten minutes before, and for ten consecutive minutes, twenty-five minutes after the injection. Any change of rate exceeding fourteen beats per minute, being that usually found, is considered a negative reaction; any less than this, positive. A positive reaction was found in 94 per cent. of 111 cases in the typhoid group, as shown by isolation of the organism. The test is more constant, the earlier in the disease it is tried; the error is about 10 per cent. during the first three weeks, rising to 100 per cent. after the ninth week.—T. J. Putnam.

TYPHOID MARY. *George A. Soper.* Mil. Surgeon, July, 1919, 65, No. 1, 1-15.—The author, who was responsible for the discovery of Typhoid Mary, the first typhoid carrier to be demonstrated, tells the complete story of her discovery, arrest and confinement, her subsequent escape, rediscovery and confinement up to the present time.—H. A. Bulger.

PRECAUTIONS FOR PREVENTING DANGER OF INFECTION FROM ANTHRAX, GREAT BRITAIN. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 243-245.—A British committee, appointed to investigate infection from anthrax, has reached the conclusion that any attempt to control anthrax by means of regulations is totally inadequate. The committee therefore recommends the establishment of central disinfection stations, the function of which shall be to disinfect the wool and hair before it reaches the factory.—L. A. Shaw.

ANTIVENEREAL-DISEASE AND SEX-HYGIENE PROGRAM FOR THE COLORED POPULATION. *R. C. Brown.* U. S. Pub. Health Ser., Pub. Health Rep., July 18, 1919, 34, No. 29, 1587-1593.—The report of the Surgeon General of the U. S. Army, 1918, shows that the ratio of venereal disease incidence of colored as compared to white troops is 2.8 to 1. Before the war little had been done to instruct the colored population or to offer them adequate treatment of venereal diseases. Unwholesome housing, lack of protective working conditions, lack of opportunities for recreation, difference in social pressure, and difference in self-control are also predisposing causes of the prevalence of venereal diseases in the southern belt.

The following program has been promulgated as a means of combating venereal disease:

A. *Medical—Clean out the Infections.* Neither the lack of facilities nor the difficulty of access to existing facilities should retard immediate and direct efforts to cure and control venereal disease. The prejudice against admitting colored patients to hospitals must be overcome.

B. *Law Enforcement—Clean up the Community.* Sporadic efforts must give way to definite effective action.

C. *Educational—Bare the Facts.* Propaganda should be distributed by all organizations having the personnel and the means to do so.

D. *Social Measures—Keep the Community Wholesome.* A trained body of social workers should control and direct the natural instincts for play and excitement.—L. A. Shaw.

HOW OHIO COMPARES WITH OTHER STATES IN VENEREAL DISEASE PREVALENCE. Ohio Pub. Health Jour., May, 1919, 10, No. 5, 195-196.—Four per cent. of the Ohioans among the second million men inducted into the army had a venereal disease. Two tables, one giving statistics for the states and the other for the cities, show the percentage of men inducted having a venereal disease.—L. A. Shaw.

ROUTINE OF THE DEPARTMENT OF HEALTH'S VENEREAL DISEASE CLINICS. N. Y. City, Dept. of Health, Weekly Bull., June 28, 1919, New Series, 8, No. 26, 201-202.—The New York City Department of Health operates twelve advisory clinics and one treatment clinic. The advisory clinic, in addition to its original function as an educational center, has now taken over the diagnosis and placement for future treatment of the patients who apply. The clinic for free treatment receives only those patients who cannot afford even the small charge made by dispensaries.—L. A. Shaw.

THE MANAGEMENT OF VENEREAL DISEASES IN EGYPT DURING THE WAR. *James W. Barrett.* Proc. Roy. Soc. Med., January, 1919, 12, No. 3, 1.—The author, after analyzing his own experiences and those of other officers in charge of the African ports, has come to the regretful conclusion that moral advice and recreation have only a limited usefulness in the fight against the venereal diseases, and that prophylaxis, the more promptly applied the better, must be our chief reliance. He advocates the distribution, through reputable apothecaries, of prophylactic packages, containing 30 per cent. calomel ointment and 20 per cent. silver solution or jelly, with a circular of instruction and warning.—T. J. Putnam.

CONTROL OF VENEREAL DISEASE IN FINLAND. *O. von Hellens.* Brit. Med. Jour., May 24, 1919, No. 3047, 651.—"The work of the 'Sanitätsburo'—the institution concerned with the supervision of the prostitute in Helsingfors—was much disturbed in 1917 by the revolution and strikes, and its operations on three occasions were more or less in abeyance. . . . The weekly attendances at the Sanitätsburo were . . . in 1916 between 200 and 250. This average was maintained early in 1917, but in the middle of March there was a sudden fall . . ., the period from the middle of March to the beginning of May being marked by few attendances and admissions to the hospital. But the fall in the notifications of gonorrhea in women at this period (which coincided with the first phase of the revolution in Russia) was followed by a considerable rise in the incidence of gonorrhea among men. . . . Ulcus molle followed the same curves as gonorrhea. . . . The figures for new cases of syphilis did not, however, coincide with those for gonorrhea and ulcus molle . . . because . . . the period between the infection and diagnosis is more variable, and often longer."—T. J. Putnam.

A NEW WAY OF COMBATING VENEREAL DISEASES. *A. Blaschko.* Deut. med. Wchnschr., Jan. 2, 1919, 45, No. 1, 12-14.—The author pleads for a broad educational campaign; among doctors, in the early diagnosis and treatment of venereal disease; among the laity, in the natural history, recognition, and results of infection. The public campaign is to be chiefly through posters, one of which is shown.—T. J. Putnam.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

QUARRY ACCIDENTS IN THE UNITED STATES DURING THE CALENDAR YEAR 1917. Compiled by *Albert H. Fay.* U. S. Bur. Mines, Tech. Paper 213.—A statistical compilation.—H. W. Haggard.

COKE OVEN ACCIDENTS IN THE UNITED STATES DURING THE CALENDAR YEAR 1917. *A. H Fay.* U. S. Bur. Mines, Tech. Paper 206.—A statistical compilation.—H. W. Haggard.

METAL MINE ACCIDENTS IN THE UNITED STATES DURING THE CALENDAR YEAR 1917. (With supplementary labor and accident tables for the years 1911 to 1917, inclusive.) *Albert H. Fay.* U. S. Bur. Mines, Tech. Paper 224.—A statistical compilation.—H. W. Haggard.

MINERS' SAFETY AND HEALTH ALMANAC. For 1919. (Miners' Circ. 24.) Compiled by *R. C. Williams.* Published by U. S. Bur. Mines in cooperation with the U. S. Pub. Health Ser.—A compendium of public health advice and useful information on everyday subjects presented to the miner in the form of an almanac.—H. W. Haggard.

TEACHING SAFETY IN THE SCHOOLS. *E. George Payne.* Safety Engineering, June, 1919, 37, No. 6.—The author recounts the methods used in Haries Teachers College, St. Louis, in the teaching of safety to school children. The methods used are very ingenious and the results attained appear highly valuable.—L. Greenburg.

TEACHING SAFETY TO APPRENTICES. *R. W. Tarbell* and *J. J. Metz.* Industrial Arts Magazine, April, 1919, 8, 143-145.—G. E. Partridge.

SAFEGUARDING OF WORKING MACHINES. Accident Preventive Supplement, American Industries, June, 1919.—This number summarizes the following principles to be adopted in the design of all machine safeguarding:

1. All power-working machines to have gears, sprockets, chains, belts, bands, pulleys, clutches, wheels, shafting, spindles, couplings, counterweights, revolving or reciprocating parts, and all other dangerous points, parts or projections guarded in approved manner.

2. All roller-fed machines on which operators' hands come within danger zone, to be guarded at the point of operation in approved manner.

3. All machines having a shearing, pressing, squeezing, or cutting action on which operators' hands come within danger zone, to be guarded at the point of operation in approved manner.

The requirements to be met by a safeguard, to be truly worthy of its name, should be:

(a) That it afford all possible safety to the operator and surrounding workmen.

(b) That it be, if possible, automatic in its action, application or operation.

(c) That it be, if possible, an integral part of the machine itself.

(d) That it do not materially diminish the output or efficiency of the machine to which it is applied.—L. Greenburg.

INDUSTRIAL SURGERY

CINEPLASTIC SURGERY AND PROSTHESES. *M. Stassen.* Archives Médicales Belges, June, 1918, 71, No. 6, 655.—Cineplastic surgery is the art of modeling the bones and soft parts of amputation stumps in such a manner that the patient can move, voluntarily and directly with his own muscles and divided tendons, the different parts of his artificial limb (cinematic prosthesis). Vanghetti, an Italian physician, was the first exponent of the theory, toward the end of the last century. The method is particularly adapted to the upper extremity. French, English and American surgeons have paid little attention to the method, but there are over a hundred books and articles in Italian, German, Spanish and French upon the method and its results. A partial bibliography is given.

This issue of the *Archives Médicales Belges* also contains articles by Vanghetti, Pellegrini and Pieri upon the technique of cineplastic surgery.—T. J. Putnam.

CLINICO-STATISTICAL CONTRIBUTION TO THE STUDY OF CINEPLASTIC SURGERY. *Pellegrini.* Archives Médicales Belges, February, 1919, 72, No. 2, 43-121.—The author reports fifteen new cases, of which only three were not quite successful. The somatic attachment in all the others was painless, resistant, and capable of doing good work. The writer has come to prefer looped motors to bulbous ones, lateral motors to terminal, opposed motors to simple. He prefers tertiary cinematization of stumps, without interfering with the bone, to the reamputation employed by many surgeons; also, he has adopted the cutaneous plastic operation with bridged flaps, rather than that with pedicled flaps. He refers to Vanghetti's book, *La Vitalization des Membres Artificiels* (1916), and his own book on the subject, now in press at the Unione Tipografica Editrice de Turin.—T. J. Putnam.

ARM PROSTHESIS. *V. Putti.* Chirurg. d. organi di movimento, February, 1919, 3, No. 1, 122-130.—The device makes it possible for workmen who have lost a hand or a forearm to use the stump to perform certain work. A leather case carrying a small iron hook is passed over the stump. Leather strips strapped to the arm pass from the casing on the inner and outer side of the arm up to the shoulder. The shoulder girdle is used to steady the device—a leather strip passing from the shoulder across the chest under the arm of the opposite side and across the back to the shoulder. The hook enables the man to grasp objects and especially to carry considerable weights. The short article is accompanied by fifteen figures.—A. Allemann.

LATE EFFECTS OF INJURIES OF THE HEAD ON THE ABILITY TO WORK. *E. Fossataro.* Policlinico, May 25, 1910, 26, No. 21, 644-651.—Severe injuries to the head may only slightly or not at all affect the capacity for work, while injuries which at first appeared slight may result in great functional disturbances.

The author reports seventeen practical cases which were kept under observation for several years. In six cases the ability to work was reduced from 50 to 100 per cent. Of these, three had epilepsy; one, cerebellar ataxy; one, converging strabismus and slight ataxy; and one, hypertrophy of the left forearm and leg. In the other eleven workmen the capacity for work was reduced from 15 to 20 per cent. Lesions of the frontal region were relatively less grave, while a comparatively slight lesion of the occipital region resulted in one case in serious injuries. The author closes with the remark that in injuries of the head everything is possible and even the experienced practitioner has no means of ascertaining the extent of the injuries. His judgment, therefore, with regard to late consequences should always be guarded.—A. Allemann.

TRAUMATIC TOXAEMIA AS A FACTOR IN SHOCK. National Health Insurance, Medical Research Committee, Special Report Series, No. 26. London: H. M. Stationery Office, 1919, pp. 47.—This report deals entirely with secondary shock, not with the primary shock which is apparently due to reflex inhibition of the heart and dilatation of the arteries. The subject is considered in a series of different papers by various members of the Special Research Committee, from both physiological and clinical points of view. A brief historical introduction by Wallace outlines the work that has been done on the subject to date.

Dale, Laidlaw, and Richards contribute a chapter on "histamine shock," the state of collapse following the administration of histamine, a derivative of histidine, a condition which they consider representative of that produced by other protein-split products. The effect of large doses of histamine on a healthy, normal animal, or upon one anesthetized with nitrous oxide and oxygen, is slight and temporary; but in an animal under ether, or in one which has lost a relatively small amount of blood, a much smaller dose causes a marked fall of blood pressure, decrease of blood volume, and death. The heart seems to be scarcely affected; the blood seems to be lodged in the capillaries. Applied locally, to the superficially scarified skin, histamine produces a wheal similar to that caused by a blow from a whip. The authors suggest that the products of tissue destruction, or of intestinal putrefaction absorbed through an injured mucosa, may cause similar symptoms.

The work of Bayliss and Cannon seems to corroborate this opinion. They found that a condi-

tion very similar to surgical shock could be produced in anesthetized animals by crushing large areas of muscle. It is prevented by cutting off the blood return from the injured limb, leaving the nerves intact. Massage of such injured muscles causes a further loss of blood pressure, which possibly explains the fact that shock is particularly apt to occur in cases of extensive fracture which are transported without proper splinting. An acidosis is often present, but is not an important factor. Bayliss has shown that the timely injection of a gum acacia solution, made up according to the directions which he gives elsewhere, will often ward off this experimental shock, if given in time. If the condition is allowed to persist until the respiration becomes irregular, apparently indicating injury to the bulbar centers, treatment is usually useless.

McNee, Sladden, and McCartney, in an analysis of a series of clinical cases, find that injuries to large areas of muscle, especially with hemorrhage, are oftenest associated with shock. In such cases the shock is often mitigated by early amputation. They have had as good results from the administration of gum acacia solution as with transfusion. Keith also reports several cases which were much improved by the use of gum acacia solution. He lays especial stress upon the diminution in blood volume, and the use of hemoglobin determinations as a guide to treatment.

Mott gives a brief account of the changes in the central nervous system occurring in various forms of shock. The brains, in gross, were wet and microscopically there was vascular stasis and dilatation of the periadventitial and perineuronal spaces. Some evidence of slight fat embolism was found in one case. The nerve cells showed a chromatolysis, apparently due to the anoxemia. In addition, the changes in staining reaction suggested some biochemical change in the cell.—T. J. Putnam.

FATIGUE AND OCCUPATIONAL NEUROSES

THE PHYSIOLOGY OF A WORKING DAY. Editorial, Brit. Med. Jour., March 29, 1919, No. 3039, 386.—During the discussion on the second reading of the Ministry of Health Bill, Major H. C. Farquharson, who has spent many years of practice in the service of the miner, expressed his astonishment that the number of hours that a man should work was to be settled by the arbitrary, capricious decision of the masses. He contended that it was a scientific problem, and suggested that if science could establish that a normal man could work up to a given standard without injury to his health or his chances of longevity, the number of hours of a working day could be standardized; and that there ought to be a scientific department, working in relation with the Ministry of Health, to decide various matters of a physiological nature in regard to capital and labor, including hours of work. Much scientific work has been done in this direction, a good deal of which is summarized in the report of the Health of Munition Workers' Committee; but the subject is complex, and physiology is far from having found a complete solution. Dr. H. M. Vernon's report to this committee that the hours of labor ought to be varied between wide limits according to the character of the work performed seems to indicate the most promising line of inquiry.—T. J. Putnam.

HOURS OF WORK AS RELATED TO OUTPUT AND HEALTH OF WORKERS—SILK MANUFACTURING. Nat. Ind. Conference Board Pub., Research Report No. 16, March, 1919.—This is the third of a series of reports on the textile industries. As in the case of its predecessors the data utilized were obtained by schedules of inquiry "supplemented by reports of field agents who visited a large number of mills." It is not possible, however, to separate the data gathered by questionnaire from data gathered by direct examination. One cannot fail in the impression that the former method was responsible for most of the material analyzed in the report. This is notably true of the section purporting to deal with the health of silk-mill workers. Again as in the case of the report upon wool workers, reviewed by the authors in a previous number of this journal, there is no effort whatsoever at medical analysis of health conditions in silk mills as they now exist. The report speaks of a lack of satisfactory records for analysis and then goes on to make use of data derived from publications of the United States Bureau of Labor Statistics, the Prudential Life Insurance Company, and a bulletin of the Department of Industry and Labor in Italy. The National Industrial Conference Board mentions the fact that it has induced a substantial number of establishments to keep careful records of absenteeism in industry over twenty-four-day periods in the summer of 1918 and another which has apparently been kept during the past winter. These records, it is acknowledged, will show little regarding the effect of hours of work on health, but may encourage the keeping of permanent records of similar character from which valid conclusions as to the effect of hours of work on the health of silk-mill employees may be drawn. We doubt very seriously whether the study of records will ever result in other than misleading conclusions. Such study must in all instances be accompanied by very thorough hygienic surveys of the industry in question. Surveys of typical establishments in the hands of highly competent men could do much toward establishing the real reason for the high tuberculosis incidence among silk workers. Studies of records and of data gathered through questionnaires can never meet the needs of the situation. It is again much to be hoped that the National Industrial Conference Board will be able to secure so high a degree of co-operation from manufacturers that a thorough medical analysis of the work in question may be secured. One cannot fail to feel that the present type of report simply exists as a preliminary and unsatisfactory exposition of the field of silk manufacturing, which is quite unworthy

of the organization which has published it.

Research Report No. 16 opens with a very readable summary of the processes involved in silk manufacturing. Eighty-four establishments situated in Pennsylvania, New Jersey, Connecticut, New York, Massachusetts, Maine, and Maryland are covered. Hours of work in these factories varied between fifty and fifty-five per week, and were fifty hours in practically two-thirds of the establishments studied. The reductions in hours of work which were examined vary from a maximum of five to a minimum of two. As the fifty-hour week is now apparently the true working week in the silk industry, conclusions are presented bearing directly upon it. "The experience with a fifty-hour week in the silk industry presented in the preceding discussion shows clearly that such a schedule has, in a great majority of instances, been accompanied by loss in output. For fifty-eight establishments reporting results secured with such a work-week, only nine maintained the production previously secured with longer schedules; in two of these nine establishments there was an increase. On the other hand, twenty-three establishments, employing more than one-half of the total workers included in the fifty-hour group, reported a loss in output somewhat less than proportional to the reduction in hours. Only one establishment reported a loss more than proportional to the reduction in time. In nineteen establishments, or about one-third of the total number, the loss was reported as about proportional." Maximum production in the industry, as experience now stands, is reached somewhere between the fifty and fifty-four-hour week. Silk manufacturing is less mechanical than the cotton or wool industries, which accounts for the fact that reduction in hours has not been so hard upon production as in them.

The report thus presents a summary of hours of work as related to output. Some attention is paid to the question as to whether the processes involved are really sensitive for such analysis, but there is none of the extensive discrimination in this regard which has been advocated by Florence. From such a publication one hopes to gain two things.

1. Do shorter hours hurt production?

This point seems adequately answered in so far as immediate results are concerned.

2. Do shorter hours result in sufficient alteration of the physical well-being of the workers to insure permanent production at or above the new level attained?

No real evidence is available upon this point. Six establishments reported an appreciable improvement in the health of workers on a fifty-hour schedule, but no facts are presented as to the character of this evidence. We may again hope that, at least so far as the question of health is concerned, the National Industrial Conference Board will consider this but a preliminary report and that at a later date we shall have real evidence as to health conditions in the silk industry. —David L. Edsall and Cecil K. Drinker.

Reducing the Hours of Work. Policlinico, June 22, 1919, 26, No. 25, 781-785.—Long working hours produce in the worker a condition of chronic fatigue which gradually affects the quantity and quality of work. Chronic fatigue is the cause of numerous morbid processes: varicose veins, flat foot, cramps, neuritis, myositis, hypertrophy and dilatation of the right heart, digestive disturbances, anemia, neurasthenia, etc. We must, however, distinguish between the different kinds of work. A miner or a worker in a chemical or metallurgical establishment will much sooner experience fatigue than a farm laborer. The chief objection to reduced working hours is a diminution of production, but the medical man cannot recognize this objection where the well-being of a whole people is at stake. But in some industries, as in the Zeiss establishment in Jena and in the coal mines of Austria, it has been demonstrated that production may be increased by reducing the working hours. As to extra work which is always paid higher, it should be granted, but only under exceptional conditions, and to a limited extent. It is said that a large amount of free time will increase alcoholism among workmen, but this can be guarded against by proper laws.—A. Allemann.

HAZARDS OF COMPRESSED AIR, DIMINISHED PRESSURE, GENERATION AND USE OF ELECTRICITY, AND ELECTRICAL WELDING

Resuscitation from Electrical Shock by the Prone Pressure Method. Safety, June, 1919, 7, No. 5, 114-120.—An historical sketch of the rules for resuscitation, of which the first were formulated in Holland in 1767, leads up to a description of the latest rules recommended by the Third Resuscitation Commission, as revised and issued by the National Electric Light Association.

These rules are listed under the following headings:

1. Free Victim from Circuit Immediately.
2. Attend Instantly to Victim's Breathing.
3. Send for a Doctor.
4. First Care for Burns.

—G. M. Fair.

A Contribution to the Technic of Artificial Respiration in Man. *G. N. Stewart* and *J. M Rogoff*. Jour. Lab. and Clin. Med., November, 1918, 4, No. 2, 73-76.—The attempt to resuscitate a person apparently dead from electric shock should be begun at once by a manual method, such as the prone-pressure method, which should be taught to every workman in the least likely to need it. The advantage of supplementing this later on by some simple mechanical device has been emphasized by Meltzer and others. Meltzer's arrangement, which he considers superior to the elaborate and expensive devices put on the market commercially, consists of a foot-bellows, a rubber bag to equalize the pressure, and a valve opened

and closed by hand. He uses a pharyngeal tube, but the authors prefer a close-fitting mask, as being more easily applied. They also describe a simpler valve, to be fastened to the mask and make one or two other minor recommendations as to technic.—T. J. Putnam.

WOMEN AND CHILDREN IN INDUSTRY

JAPANESE WOMEN AND GIRLS IN INDUSTRY. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 229-230.—Almost two-thirds of the factory workers of Japan are women and girls. The conditions in the factories are deplorable. Hours of work range from thirteen to sixteen hours per day, with apparently no age limit for children. Living conditions are sickening. Of the 200,000 persons recruited each year, 120,000 eventually meet physical or moral ruin.—L. A. Shaw.

EFFECT OF THE THIRD YEAR OF WAR ON INDUSTRIAL EMPLOYMENT OF WOMEN AND GIRLS. *A. M. Anderson.* Great Britain, Ann. Rep. Chief Inspect. Factories and Workshops for 1916, p. 5-10.—The events of 1916 have widened the altogether new industrial position and outlook for women. The substitution of women for men in many industries has progressed to a point where far-reaching effects are to be looked for in the national life. This phase has become so systematized that a guide has been prepared for the National Service Department showing the trades and processes and the conditions under which substitution of women and girls is advisable or possible from the points of view of efficiency and of health. It appears that one absolute limit to the replacement of men by women lies in those heavy occupations and processes where adaptation of the plant or appliances cannot be effected so as to bring them within the compass even of selected women of above normal capacity.

As regards the health of the women, it seems difficult to estimate how far, if at all, heavy work causes any physical injury, as there is no record of women who give up or their reasons for doing so. It appears that in all outdoor laboring the health and appetite of the workers is greatly improved by work in the open air.

A new difficulty has arisen in that it has become very hard to replace the women who have left the so-called women's industries to take a hand in the work formerly done by men. The national gain appears great in the new self-confidence engendered in women by the large number of cases where they efficiently do men's work at men's wages. If this new valuation can be reflected in their own special occupations, a renaissance may there be effected of even greater significance than the immediate widening of women's opportunities. Undervaluation there in the past has been the bane of efficiency.

A preliminary survey of factories where women were employed, covering 1396 plants with 198,661 women and girls, was made with special reference to the question of welfare. The plants were roughly classified into three classes. It was found that 31 per cent. were in class A, 49 per cent. in B, and 20 per cent. in C. B and C conditions meant, in varying combinations, partial or complete lack of mess-room accommodations or facilities for cooking food; inadequate or non-existent cloak rooms and washing appliances; lack of a supply of seats; need of first-aid and rest rooms; supervision even of numerous girls by men only, and other defects, in factories mostly working twelve-hour shifts. This investigation resulted in the appointment of welfare directors for individual plants, and marked improvement followed in the main. In some plants the employees took the initiative and supported their own welfare committees, who furnished, with money subscribed by the employees, a variety of features as desired by the workers.—B. Cohen.

ENGLISH WORKING WOMEN DURING THE WAR AND AFTER. U. S. Bur. Labor Statis., Month. Labor Rev., May, 1919, 8, No. 5, 236-243.—A report from the Board of Trade Journal (London) for March 6, 1919. A table gives the number of women employed in certain essential industries on July, 1914, compared with the number in the same industries July, 1918. Dr. Rhoda Adamson was put in charge of the medical supervision of several thousand women engaged in various processes of engineering work, formerly considered a man's work. She studied the different operations which the women were called upon to perform, so that every woman might be thoroughly examined with a view to her physical fitness to perform the particular work to which she was assigned. Dr. Adamson was also able to determine, through successive examinations, the changes of health—if any—which might be attributed to occupational strain. As a result of two years' experience, she concluded that, provided care is taken in assigning women to work suited to their strength, they can perform, without risk, the engineering operations which were formerly regarded as beyond their power.

The rest of the report is a survey of the post-war outlook for women in non-munition factories in England, and the demands of English working women.—L. A. Shaw.

STANDARD WORKING CONDITIONS FOR WOMEN IN CALIFORNIA LAUNDRY AND MANUFACTURING INDUSTRIES. U. S. Bur. Labor Statis., Month. Labor Rev., May, 1919, 8, No. 5, 232-235.—An extensive and detailed order of twenty-six articles promulgated by the Industrial Welfare Commission of the state of California, prescribing standard conditions of employment for female workers in laundries and manufacturing industries throughout the state.—L. A. Shaw.

RECENT ORDERS BY BRITISH COLUMBIA MINIMUM WAGE BOARD. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 207-208.—By the provisions of the Minimum Wage Act of British Columbia, a minimum wage board

was constituted. From August, 1918, to March 31, 1919, six orders were issued by the board, all relating to wages of women engaged in the mercantile, laundering, cleaning, and dyeing industries. These laws fix the minimum wages for women over 18 years of age, for those under 18 years, and establish various scales for apprentices.—L. A. Shaw.

EMPLOYMENT OF WOMEN IN ACETYLENE WELDING. *Helen G. Fisk.* U. S. Bur. Labor Statis., Month. Labor Rev., May, 1919, 8, No. 5, 221-230.—A comprehensive survey of the acetylene welding process with special reference to the adaptability of women to such work. Working conditions for women welders vary greatly with the individual concern, but despite the hazards of the occupation, welding is an attractive field for women. The work is interesting and always presents the worker with opportunities to increase her skill. The pay received is considered good. Nine and nine and one-half-hour days prevail. For light welding work women are in all respects equal to men.—L. A. Shaw.

INDUSTRIAL SANITATION: ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

A PLAN TO AID AND ADVISE PROSPECTIVE MANUFACTURERS BEFORE THEY CONSTRUCT THEIR PLANTS. Safety, June, 1919, 7, No. 5, 114-120.—The Engineering Division of the State Department of Labor of New York has issued a blank form (E159) on which preliminary studies and specifications of proposed buildings, alterations, and so forth, may be sketched and submitted to the division for examination and criticism. This service is rendered by the State Industrial Commission in order to obviate the necessity of structural changes in a completed structure, when upon inspection by the Labor Department it is found that buildings or alterations do not conform to the requirements of the Labor Law and the Industrial Code.—G. M. Fair.

SCIENTIFIC LIGHTING AND INDUSTRIAL EFFICIENCY. Engineer, Aug. 1, 1919, 128, No. 3318, 122.—In a lecture on *Scientific Lighting and Industrial Efficiency* delivered at the British Scientific Products Exhibition, Westminster, on July 28, Mr. Leon Gaster pointed out the close relation existing between good industrial lighting and the health of workers, and gave many instances of accidents due to insufficient or badly arranged conditions of illumination. Light, he said, was a *tool*, and it was absurd to install expensive machinery and to pay highly skilled workmen, and then to neglect the relatively small expenditure on illumination necessary for the efficient performance of work. Instances were quoted showing that, as a result of improved lighting conditions, increases in output of 8 to 10 per cent. had been recorded. Another factor of importance was the reduction in the amount of spoiled work.

The cost of lighting formed only a small proportion, in some cases less than 1 per cent. of the wages bill. Good industrial lighting was therefore amply justified on economic as well as on humanitarian grounds.—G. M. Fair.

INDUSTRIAL LIGHTING. *C. E. Clewell.* Jour. Franklin Inst., July, 1919, 188, No. 1, 51-90.—While no attempt is made in this extensive paper to give a scientific analysis of factory lighting from the quantitative side, the author gives an excellent general outline of the factors involved in the problem. The engineering details of both natural and artificial lighting are discussed, costs are analyzed, and accidents are considered.—G. M. Fair.

LAW AND VENTILATION. Domestic Engineering, July 5, 1919, 88, No. 5, 8.—A brief discussion of the legal liability of employers for lack of ventilation.—G. M. Fair.

WATER SUPPLIES AND DRINKING DEVICES—HOW THEY MAY SPREAD BACTERIAL DISEASES. *W. D. Stovall* and *F. R. King.* Wisconsin State Board of Health Bulletin, January-March, 1919, 3, No. 5, 14-19.—A classification of drinking waters as safe or unsafe according to the source from which they arise. Drinking waters as carriers of bacterial diseases and the drinking devices which must be condemned, on this account, are here considered. Recommendations for hygienic drinking devices, and reference to illustrations of them are included.—L. A. Shaw.

STANDARDS FOR FACTORY WASHROOM FACILITIES. *L. A. Coolidge.* Dom. Engin., Aug. 9, 1919, 88, No. 6, 253-254.—A discussion of the standards for factory washroom facilities recommended by the Welfare Division of the Committee on Labor, a part of the Advisory Commission of the Council of National Defense.—G. M. Fair.

SANITARY EQUIPMENT FOR INDUSTRIAL BUILDINGS. *C. L. Hubbard.* Dom. Engin., July 19, 1919, 88, No. 3, 100-102, 141.—Suggestions for securing contracts for the installation of modern plumbing in factories and for arranging the sanitary equipment in a large plant.—G. M. Fair.

EFFICIENT CONTROL OF SMALL SEWAGE TREATMENT WORKS. *J. H. Edmonson.* Munic. Eng., July, 1919, 57, No. 1, 21-22.—In the control of small sewage treatment works, as in the control of large ones, efficiency in combination with economy is the goal to be arrived at. The author describes such matters entering into the proper control of small plants as measurement of sewage flow, measurement of sludge, refined and approximate analyses, and some simple tests.—G. M. Fair.

CONTROL OVER FACTORY WASTES IN WISCONSIN. Engin. N.-Rec., July 24, 1919, 83, No. 4, 159.—For the control of the treatment of industrial wastes in Wisconsin, the State Board of Health

has prepared a list of requirements for the construction and operation of plants for treating various classes of wastes. A copy of these requirements is submitted to each concern installing a waste-treatment plant for signature by a responsible official. Of the two witnesses to the signature, one must be the local health officer.—G. M. Fair.

INDUSTRIAL PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

HOUSING PLANS THAT WORKERS LIKE. System, August, 1919, 34, No. 2, 212-216.—A brief popular statement concerning several successful housing schemes. The account suggests some essentials regarding the value of housing schemes to workers, the establishment of restrictions, size of houses, and methods of sale.—C. H. Paull.

HOUSING POLICY FOR ONTARIO, CANADA. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 294-297.—The shortage of Canadian workmen became so acute, as a result of the war, that the Ontario government appointed a committee to make a report on housing conditions. The committee concludes that the ideal housing policy is to be found in co-operative construction and control, combined with municipal and governmental provision of loans at the lowest rate of interest. Recommendations are made for an equitable system of taxing land.

As an intimate part of the housing problem, it is suggested that town planning be made obligatory for all urban municipalities in the province. Plans and specifications for laborers' cottages should be available upon application. The committee also makes certain suggestions in regard to the type of house for the building of which the state is ready to render its aid.—L. A. Shaw.

THE NEW LONDON HOUSING PROJECT. *L. L. Tribus.* Munic. Jour. and Public Works, Aug. 16, 1919, 47, No. 7, 102-104.—A general description of the housing development of the United States Housing Corporation at New London, Connecticut.—G. M. Fair.

THE QUESTION OF WORKMEN'S LODGINGS IN LILLE AFTER THE WAR. *A. Calmette.* Rev. d'hyg., Jan., 1919, 41, No. 1, 17-31.—The destruction of large numbers of dwellings in Lille during the war will work a great hardship when the fugitives return there. The first step which has been taken has been the limitation of the number of people who may live in each house. Temporary wooden villages should be erected in the city and the suburbs; houses for families, and barracks for single men. The municipality should finance these buildings, and then let them at a rate which will repay the entire expense within ten years. It should then be possible to plan out the future development of the city along the most approved lines.—T. J. Putnam.

INDUSTRIAL INVESTIGATIONS AND SURVEYS

STATE WIDE HEALTH SURVEY. Bull. N. Y. State Ind. Com., June, 1919, 4, No. 8, 175.—An announcement of the proposed plan for making a survey of sanitary and health conditions in large industrial plants in the state. This survey is being conducted co-operatively by the State Department of Health and the State Industrial Commission.—C. H. Paull.

INDUSTRIAL MANAGEMENT IN ITS HEALTH RELATIONS: SPECIAL TESTS IN THE SELECTION OF EMPLOYEES

MENTAL TESTS. *Shepherd I. Franz.* Ment. Hyg., April, 1919, 3, No. 2, 258-265.—A review of the methods of mental examination from phrenology and "sizing a person up" to the modern scientific tests of intelligence. By most employers the practical test has been used. "A manufacturer hiring a machinist may determine his competency by finding out, if the applicant tells the truth, what kinds of positions he has previously held, or he may determine it in a very practical way by getting the applicant for a job to show his ability at a lathe or other machine to which he may be assigned. Or the builder hires a bricklayer, and pays him while his competency is being determined. Such practical tests are, however, expensive. They risk costly machinery and materials, and if an unskilled man be permitted to try to do work for which he has no competency he may endanger the lives of others as well as his own. Tests have been devised so that the ability of a machinist, for example, may be determined without the danger of loss of material, destruction of tools, and the payment of wages." The paper is a transcription of a part of Dr. Franz's Book, *Handbook of Mental Examination Methods.*—S. Cobb.

AGE SCALE METHODS OF MEASURING INTELLIGENCE *R. C. Moore.* Jour. Exper. Ped., June 5, 1919, 5, No. 2, 78-97.—This is a study of the validity of the current methods of measuring intelligence. There is a brief but useful historical outline of the methods, and a report of a statistical study made with 389 children for the purpose of comparing the results of Binet's 1908 series, Binet's 1911 series, and Goddard's series. The

conclusions have a value for the general theory of tests. The mental ages derived from the use of Binet's 1911 scale most closely resemble the corresponding physiological ages. Goddard's series ranks second in this respect.—G. E. Partridge.

AN ABSOLUTE INTELLIGENCE SCALE: A STUDY IN METHOD. *G. Arthur* and *H. Woodrow.* Jour. Applied Psychology, June, 1919, 3, No. 2, 118-137. —G. E. Partridge.

"CROSS-OUT" TESTS, WITH SUGGESTIONS AS TO A GROUP SCALE OF THE EMOTIONS. *S. L. Pressey* and *L. W. Pressey.* Jour. Applied Psychology, June, 1919, 3, No. 2, 138-150.—A summary of the work of the classification division of the Adjutant General's department, containing an account of the army personnel organization, classification of soldiers, soldiers' classification card, trade specifications and occupational index, trade tests, tables of occupational needs, personnel specifications, classification and rating of officers, the rating scale, the rating-card scale, relations with the field, the recruit-receiving building.—G. E. Partridge.

MEASURING A WORKMAN'S SKILL: THE USE OF TRADE TESTS IN THE ARMY AND INDUSTRIAL ESTABLISHMENTS. *W. V. Bingham.* National Society for Vocational Education, Bulletin No. 30, June, 1919, 7-17.—The development of trade testing has been one of the useful by-products of the war. Although we had acknowledged that waste of human life and skill by misplacement of men is a costly extravagance, it required the stress of war to make us act on this conviction. The scientific method brought from the laboratories into the service of the army will now find enlarged application to important problems of human adjustment in industry. The tests used in the military service were based upon an analysis of the occupation. This analysis determined the test questions or processes, which were later calibrated by their application to men whose degree of proficiency was already known. Two important facts were discovered. The first was the rarity, indeed the non-existence, of the exclusively motor-minded type of tradesman, the man who can do the work but who cannot tell how it is done. The second was that, in the majority of the trades, the oral tests yielded more accurate differentiations of proficiency than did the performance tests. In other words, the journeyman and the expert differ from the apprentice not so much because they have greater manual skill and dexterity as because they excel in judgment, technical information or trade knowledge.—G. E. Partridge.

MENTAL TESTS FOR PROSPECTIVE TELEGRAPHERS: A STUDY OF THE DIAGNOSTIC VALUE OF MENTAL TESTS FOR PREDICTING ABILITY TO LEARN TELEGRAPHY. *L. L. Thurstone.* Jour. Applied Psychology, June, 1919, 3, No. 2, 110-117.—This investigation was undertaken to determine whether it is possible to predict ability in telegraphy by mental tests. The persons examined were 165 drafted men of Class A who registered for a night course in radio-telegraphy at the Carnegie Institute of Technology. The tests employed were: rhythm test, opposites tests, analogies test, Gordon directions test, Trabue completion test, spelling test, arithmetic test, sentence test. The conclusion reached by studying the correlations with the highest receiving speed attained during the first 100 hours of practice is that ability to learn telegraphy is a special ability. It is not closely correlated with general intelligence nor with education. The rhythm test proved to be by far the most diagnostic of ability and showed a zero-order coefficient of 0.48, which was not noticeably increased by the addition of four of the best general intelligence tests. A vocational survey of students in a radio-mechanics course showed, on the other hand, that schooling is one of the best diagnostic criteria in selecting men to be trained in the care and repair of wireless apparatus.—G. E. Partridge.

AIR SERVICE TESTS OF APTITUDE FOR FLYING. *V. A. C. Henmom.* Jour. Applied Psychology, June, 1919, 3, No. 2, 103-109.—This is an account of the use of psychological tests in the selection of men for the Air Service, where obviously the determination of ability in advance of practical training is of the highest importance. Study of correlation of tests with reports from the flying school shows that tests of emotional stability, perception of tilt, and mental alertness were of most value. The composite score obtained from the series of tests recommended gives a multiple correlation coefficient of 0.70, which the writer thinks is a sufficient basis for confident prognosis of ability. —G. E. Partridge.

THE PROOF OR DISPROOF OF THE EXISTENCE OF GENERAL ABILITY. *G. H. Thomson.* Brit. Jour. Psychology, May, 1919, 11, Nos. 3 and 4, 320-336.

THE HIERARCHY OF ABILITIES. *G. H. Thomson.* Brit. Jour. Psychology, May, 1919, 11, Nos. 3 and 4, 337-344.

GENERAL ABILITY, CLEVERNESS AND PURPOSE. *J. C. M. Garnett.* Brit. Jour. Psychology, May, 1919, 11, Nos. 3 and 4, 345-368.—This and the above two papers, too mathematical in form to allow a brief review, all deal with phases of the problem of *general intelligence.* They are important from the standpoint of the theory of mental tests.—G. E. Partridge.

INDUSTRIAL HEALTH LEGISLATION AND COURT DECISIONS: MALINGERING

A NEW MALINGEROSCOPE. *E. M. Alger.* Am. Jour. Ophth., Feb., 1919, 2, No. 2, 112-114.—This device purposes to establish the actual vision in each eye. It consists of two short parallel cylinders arranged opera-glass fashion. The distal end of each tube is covered by a cap which can be

rotated, and contains a 6 mm. aperture, eccentrically placed. Through rotation of the caps it is possible to vary the distance between the apertures (lying always in the same horizontal plane) from 45 mm. to 70 mm. The patient looks through this apparatus at two ordinary test cards, 20 feet away, about 18 inches apart. The apertures just cover the width of one card, but both cards cannot be seen at the same time with either eye alone. When the apertures are approximated to considerably less than the interpupillary distance, both cards are seen at the same time, but the right-hand card is seen only with the left, and the left-hand card only with the right eye. If the malingerer is asked to read the right-hand card through the right-hand opening he is apt to think he is using his right eye when he is really using his left eye.—A. Allemann.

INDUSTRIAL MORTALITY AND MORBIDITY STATISTICS

Monthly Statement of Coal Mine Fatalities in the United States for January and March, 1919. *Albert H. Fay.* U. S. Bur. Mines. —A compilation of coal mine fatalities listed by states and causes; includes also additions to the list of permissible explosives and mine appliances. —H. W. Haggard.

Influence of the War on Accident Rates in Machine Building. *Lucian W. Chaney,* U. S. Bur. Labor Statis., Month. Labor Rev., April, 1919, 8, No. 4, 12-21.—The author gives tables from which he draws conclusions regarding the effect on accident rates of the great intensification of industrial effort incident to the war. The first seven tables show the number of accidents and accident frequency rates in various industrial plants before and during the war. The upward trend of severity rates in machine building concerns, compared with a declining severity rate in the navy yards, can only be explained by the exercise of skill and energy on the part of the safety engineers in direct charge of the navy yards. The reason for fluctuations in accident rates is not yet satisfactorily answered, but all available data indicate that it is due, more than to any other factor, to the introduction into the working force of relatively inexperienced men. A "ratio" chart giving the rate of change in four related items—employment, product per worker, labor recruiting, and accident rates—shows that the curve of accident frequency follows that of labor recruiting with surprising promptness, and that increased product per worker is less of a controlling factor than recruiting.—L. A. Shaw.

Physical Examination of Employees, Giving Statistics of Examination of Employees of the Department of Health. *Maude Glasgow.* Month. Bull. Depart. Health, City of New York, April, 1919, 9, No. 4.—The Welfare Division of the Department of Health has now entered upon the fifth year of its existence. The general scheme of its methods is described, and a table of the findings on physical examination of 1,534 persons during a year is given.—T. J. Putnam.

ABSTRACT OF THE LITERATURE

OF

INDUSTRIAL HYGIENE

VOLUME I NOVEMBER, 1919 NUMBER 7

CONTENTS

	PAGE
General	99
Systemic Occupational Diseases: Occurrence, Treatment and Prevention	104
Poisonous Hazards and Their Effects: Gases, Chemicals, etc.	104
Dust Hazards and Their Effects	106
Occupational Infectious Diseases: Occurrence, Treatment and Prevention	106
Occurrence and Prevention of Industrial Accidents	107
Industrial Surgery	108
Fatigue and Occupational Neuroses	109
Nutrition and Metabolism	109
Women and Children in Industry	109
Industrial Sanitation: Illumination, Ventilation, Heating, Water Supply, Sewage Disposal	112
Medical Dispensaries and Hospitals in Industrial Plants	113
Industrial Nursing	113
Industrial, Personal and Community Hygiene: Housing, etc.	113
Industrial Investigations and Surveys	114
Industrial Service and Mutual Benefit Associations	114
Industrial Health Legislation and Court Decisions: Malingering	115
Workmen's Compensation and Insurance	116
Rehabilitation of Disabled Employees	118

GENERAL

PUBLIC HEALTH IN THE INDUSTRIAL AGE. *P. Geddes.* The Sociological Review, Spring, 1919, 2, No. 1, 49–61. — This is one of the chapters of the first volume of Professor Geddes' *Report to the Durbar of Indore.* The report as a whole is the result of a prolonged study of the city of Indore, the capital of one of the native states of India, and includes (1) the history of the city, (2) the effects of its growing industrialism in producing overcrowding, disease, and other well-known results, and (3) projects for betterment in the immediate and in the more remote future. This report is one of several made by Professor Geddes, who for five years has been studying the industrial conditions in the cities of India.

Professor Geddes discusses briefly in this paper several fundamental points of civic hygiene. He criticizes the practice, so common in large cities, of demolishing old buildings without previous attention to providing new ones, and maintains that this has been no small factor in making decent houses pass beyond the means of the people in every city. The relation between occupation and disease, the writer remarks, is often to be found through a third term — bad housing. As soon as we improve the housing conditions, we find relief from the diseases of occupation. Town planning is defined as not a new specialization, but as the returning co-ordination of several branches toward civic well-being. It is the civic aspect and application, in its broadest conception, of the higher and more general level of public and personal thinking which has long been arising here and there. Diseases are many, but health is one. To find co-ordinating principles of health and to establish general conditions that will produce health, is one of the great works of future medicine. The problem of increasingly insuring city health becomes a great and far-reaching one. Every specialist has been contributing his point of view; now the time for co-ordination has come. Pure food, pure air and pure water are concepts that must be emotionalized. We must conceive of diseases not in the terms of the developing life, but in terms of the depressed life which our sanitarians, learned and specialized pathologists as they are, do not as yet broadly discern or explain, do not envisage, cannot yet handle.

A brief review fails entirely to convey the unusual quality of this article. It ought to be read by every hygienist. — G. E. Partridge.

ROYAL INSTITUTE OF PUBLIC HEALTH. Report of London Conference, June 25, 1919. Lancet, July 5 and 12, 1919, 197, Nos. 5001 and 5002, 15–18, 60–63. — This report contains a discussion of the work of the new ministry, the prevention and arrest of venereal disease, housing in relation to national health, maternity and child welfare, and the tuberculosis problem. — J. C. Aub.

GREAT BRITAIN, ANN. REP. CHIEF INSPECT. FACTORIES AND WORKSHOPS FOR 1917. Parliamentary Paper, Cd. 9108, 1918, pp. 24. — After twenty-one years as Chief Inspector of Factories and Workshops, Sir Arthur Whitelegge retired on reaching the age limit in 1917. The current annual report is signed by H. M. Robinson, his successor.

Aside from routine duties, interesting developments have arisen out of conditions created in industry by the war. T. N. T. poisoning has been successfully attacked and a notable reduction in the number of cases has resulted. Special inquiries have been also instituted into the effects of ether and alcohol fumes on the workers making cordite, and into cases of arseniuretted hydrogen poisoning connected with the manufacture of coal tar dyes. The output of aeroplane factories has been much facilitated by the attention directed to the proper ventilation of the doping rooms, where poisonous fumes are produced.

A new feature, due to the shortage of male labor, is the employment of women in electric power plants. In a few sub-stations women have even been in sole charge of the operation of the plant, including the running of the generators with the accompanying switching and regulating duties. It appears, however, that in general the work of the sub-station attendants is more suitable for men, and schemes are in operation for the training of disabled soldiers and sailors for the work.

The enforcement of welfare conditions in factories has become part of the ordinary duty of the factory inspectors under the Miscellaneous Provisions Act of 1916. Conferences with employers' and workers' representatives have been held to discuss criticisms and suggestions which had been submitted, and before the end of the year orders were issued requiring the provision of (1) protective clothing and cloak and messroom accommodations in factories in which tin plate is manufactured; (2) a supply of drinking water in all factories and workshops where twenty-five or more persons are employed; and (3) first-aid boxes and, in some cases, ambulance rooms in blast furnaces, iron mills, and other metal works. [Ambulance rooms are the equivalent of our emergency hospitals.]

The following special reports are appended to the Annual Report of the Chief Inspector:

Hours of Work and Emergency Orders, by Mr. G. Bellhouse, Deputy Chief Inspector.

Extent and Effect of Substitution of Women and Girls in Industry, by Miss Anderson, Principal Lady Inspector.

Doping in Aircraft Works, by Mr. S. Smith, Dangerous Trades Inspector.

Trinitrotoluene Poisoning, by Dr. Legge, Senior Medical Inspector.

— Barnett Cohen.

THE LABOR SITUATION IN FRANCE. *N. Swartz.* Bull. N. Y. State Ind. Com., July, 1919, 4, No. 10, 191. — In her comments on a recent visit to France, Miss Swartz calls attention to the fact that the heavy work in munition factories during the war has made many women workers unfit for their former occupations where deftness of touch is essential. She calls attention also to working conditions in French factories where machinery is generally less carefully guarded than in this country. On the other hand, the writer found a certain lack of the tenseness which is so characteristic of our American factories. — C. H. Paull.

RESOLUTIONS OF THE AMERICAN FEDERATION OF LABOR ON SCIENTIFIC RESEARCH. Science, July 4, 1919, 50, No. 1279, 15. — The American Federation of Labor, in convention assembled, has resolved that a broad program of scientific and technical research is of major importance to the national welfare and should be fostered in every way by the federal government, and that the activities of the government itself in such research should be adequately and generously supported in order that the work may be greatly strengthened and extended. — G. M. Fair.

THE EDUCATIONAL PROGRAM OF AMERICAN LABOR. From American Labor's Greatest Convention. American Federationist, August, 1919, 26, No. 8, 604–605. — At this convention of American Labor, commendation was given to the various states which have enacted continuation-school laws, and to the labor movement of those states for the part they played in securing such legislation. Support was urged of various recommendations, among which were the following:

1. Establishment of more adequate methods of vocational guidance in our schools, to meet the increasing demands.
2. Simplification of courses of study.
3. Drastic reduction in the prevailing size of classes.
4. Diversified training in the upper years of the elementary school.
5. Instruction in the privileges and obligations of intelligent citizenship.
6. The use of the English language as the basic language in instruction, and the provision of adequate facilities for teaching English to non-English speaking people.
7. Extension of playground facilities and continuation of medical and dental inspection.
8. Better enforcement of laws for compulsory education.
9. Wider use of the school plant to secure increased returns to the community through additional civic, social, and educational services, and public forums.
10. The introduction of the metric system into this country.
11. Thorough revision of the salaries of teachers, to meet the increased cost of living and the growing appreciation of the value of teachers' services.
12. A more liberal increase in school revenues.

The convention emphasized the fact that men and women in becoming teachers do not thereby surrender their rights as American citizens, and that the right of teachers to affiliate with organized labor must not be interfered with in any way. Representation of organized labor on all boards of education was deemed essential to the best interests of our schools, school children, teachers and the public

generally. The Executive Council of the American Federation of Labor and all state and local central bodies were urged to give every possible support to the American Federation of Teachers in the work of organizing the teachers of our country. — G. E. Partridge.

THE NEW EDUCATION AND THE NATION'S BUSINESS. *G. L. Swiggert.* School and Society, August 23, 1919, 10, No. 243. — The writer presents a picture of a far broader commercial life in our country than has hitherto been reached, and emphasizes the need of a correspondingly wider conception of business training as commercial education. This training should begin before the secondary school and should include not only geography, history and language, with reference to commercial use, but also instruction in the elementary business operations of factory and office. — G. E. Partridge.

TEACHING IN BRITISH CONTINUATION SCHOOLS. A circular issued by the Board of Education. School and Society, August 23, 1919, 10, No. 243, 237–238. — This is an appeal, under nine topics, for support of the idea of the continuation school as a new departure in education, as provided by the Education Act of 1918. By this act all youths from 14 to 16 years of age, who do not attend regular schools, must attend continuation schools, for which time must be set apart in the day — one whole day, or two half-days in each week, or an equivalent amount of time arranged according to the plan adopted in any particular locality. An appeal is made to the public to become interested in this work, and likewise to all who have qualifications to direct their talents to the work of teaching in this field. — G. E. Partridge.

THE PITTSBURGH CO-OPERATIVE PLAN. *E. Rynearson.* The School Review, September, 1919, No. 7, 533–544. — Two high schools of Pittsburgh have been experimenting with part-time courses, the pupils of which are engaged in commercial occupations. It was discovered that practically the same amount of work was done in school as in former years. The alternate-week plan has been found on the whole most satisfactory. Many new problems have been met, but none that have proved too difficult to solve. That part-time courses appeal to the class of pupils who, under the usual conditions, drop out of school, has been proved by the fact that a great number of those who had left school came back to the part-time courses.

The American Locomotive Company of Pittsburgh has agreed to a plan that will give to the high school entrants not only a high-school education, but also a definite objective of work. The course is planned on a five-year basis. The first year will be devoted entirely to school work. During the second, third, and fourth years, the alternate-week program will be carried on. The fifth year will be given entirely to work in the shop. Upon satisfactory completion of the work, a diploma will be granted by the Board of Education, and a certificate by the industrial plant.

A Research Bureau for Retail Training has been established through the co-operation of the Carnegie Institute of Technology, the Board of Public Education and some progressive department stores. Many who believe that retail commercial work is an inferior occupation have offered strong opposition, but the upholders of the plan, backed by able scientific men, have succeeded in establishing training school work, and they call attention to the fact that in one department store alone there are more than 100 persons receiving salaries of $4,000 or more. In this work also the alternate-week plan is adopted. The evidence thus far seems to point to the conclusion that with properly regulated work, almost as much can be accomplished both in school and in employment as was formerly accomplished by giving the time exclusively to either activity.

The paper will repay careful study in detail on the part of any one interested in this promising new line, efficiency-engineering. — G. E. Partridge.

COLLEGE EDUCATION FOR INDUSTRIAL WORKERS. *P. R. Kolbe.* School and Society, September 13, 1919, 10, No. 246, 324–325. — A brief account of the work of the Municipal University of Akron in providing college education on a part-time basis for the young men and women of the city, a great number of whom are employed in the rubber factories. Several plans are in operation. Some of the factories have a three-shift program, one shift being in service from midafternoon to midnight, and in this way leave the morning hours free for college work. There is also a night school. By means of a co-operative plan, students in engineering courses in the college alternate between work and college, in two-week periods. — G. E. Partridge.

AGRICULTURAL EDUCATION. National Society for Vocational Education, Bulletin No. 31, pp. 30. — Purpose and methods of supervision in a state system of agricultural education; discussion of important problems of agricultural education; present and future relations of vocational agricultural education and agricultural extension. — G. E. Partridge.

RECENT DEVELOPMENTS IN INDUSTRIAL TRAINING. *D. Rosenstein.* School and Society, August 9, 1919, 10, No. 241, 155–163. — This article is a brief account of the work of the training school of the Emergency Fleet Corporation at Newport News, and of the United States Training Service of the Department of Labor, which the author says is a projection into peace times of the government's interest in war labor activities, and is a recognition of the present great need of industrial training. The function of the training service is to encourage the institution of special training departments in the industrial establishments of the country, and to give practical assistance in their organization. The country has been mapped out into twelve districts, to each of which a field supervisor of training is assigned. The work represents also a propaganda to advertise among manufacturers the practical and paying features of organized training. This training work is intended to be immediately practical, and to

form a necessary link in the process that begins with the employment department. The cost of making raw labor available for industrial purposes is as much a real cost as the cost of converting raw materials into the finished products.

In the opinion of the writer of the paper, this new industrial training opens up a broad educational field, and is closely related to the social aspect of vocational training. "It will really place an instrument in the hands of the worker by means of which he can learn to control his industrial destiny, and gradually shape the industrial age in which he finds himself so that it will yield him a greater measure of spiritual satisfaction, freedom, happiness and the leisure to pursue higher ends." — G. E. Partridge.

THEODORE ROOSEVELT AND INDUSTRIAL EDUCATION. *E. B. Thomas.* Manual Training Magazine, October, 1919, 21, No. 2, 39–40. — The writer brings together some of the late President's arguments for a much wider industrial training than we have at present, with a view to furnishing more practical training and preventing the decline, in this country, of the ideal of hard work. "My plea is for a tremendous expansion of the vocational, industrial and technical side of education. . . . The printer, the electrical worker, the house painter, the foundry man should be trained just as carefully as the stenographer or the drug clerk." — G. E. Partridge.

PROCEEDINGS OF THE TWENTY-SEVENTH ANNUAL MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION, BALTIMORE, DECEMBER 27 AND 28, 1918. Report of the Secretary, *H. S. Langfeld.* The Psychological Bulletin, February, 1919, 16, No. 2, 33–61. — Several of the papers here presented in abstract contain items of interest to the practical psychologist. Occupational Therapy is treated by B. T. Baldwin, and the Relation of Intelligence to Occupation as Indicated by Army Data, by J. W. Bridges. R. Dodge emphasizes the result of the war in bringing to the front a great problem of mental engineering. There are brief reports of papers on the results and values of psychological examining in the United States Army, problems of re-education, army trade tests and their practical application, methods of testing intelligence, the selection and training of telegraphers, examination of emotional fitness for warfare. These papers seem to indicate that the predominant interest of psychologists at the present time is in the further development of the problems and methods of individual psychology that have been brought to the front by the war. — G. E. Partridge.

LESSONS OF THE WAR. National Society for Vocational Education, Bulletin No. 28, June, 1919. — This bulletin of the National Society for Vocational Education contains the following interesting papers: REHABILITATION OF WOUNDED SOLDIERS, A. D. Dean; RE-EDUCATION OF WOUNDED SOLDIERS, J. A. C. Chandler; LESSONS FROM THE EXPERIENCE OF TRAINING SHIPYARD WORKERS, E. E. MacNary; USE OF VOCATIONAL AND TECHNICAL SCHOOLS FOR TRAINING ARMY MECHANICIANS, C. R. Dooley; THE WAR WORK OF THE INDUSTRIAL AND TRADE SCHOOLS, J. C. Wright. Generalizing the contents of these papers, one may infer that the war has taught, first of all, the necessity and the economy of applying, to a far greater degree than has hitherto been done, principles of scientific analysis and clear thinking to the problems of industry. The acute problem of replacement that arises when a man is totally disabled so far as concerns his previous occupation (the Federal Board for Vocational Education estimates that there are 50,000 such cases) will yield, in its successful handling, results of wide general application to the problems of vocational training and adjustment.

Close study of the factors of efficiency, under stress of war conditions, has demonstrated the great value of definite and intensive training in the production of skill in labor. Only about half the required number of men skilled in the special army occupations were available through the draft. The work of the Committee on Education and Special Training in producing the experience required was an experiment in industrial education on a large scale, and in the opinion of the Director of the Vocational Section, the special training was highly successful, and has had a marked general educational effect.

The experiences of the war indicate the need of (1) more evening schools, especially those offering short intensive courses to supplement the daily employment of the worker, and (2) modifications in both day and evening courses in trade schools and elsewhere, to increase their immediate value to the individual, and at the same time to serve not only the needs of industry, but also those of a modern army. — G. E. Partridge.

GIVING SOLDIERS THE BEST CHANCE. *P. A. Best.* System, July, 1919, 36, No. 1, 80. — Mr. Best, director and general manager, Selfridge and Company, Ltd., London, outlines in a clear and practical manner the policy of his company. This company had 1,079 of its employees in service and has followed consistently the common policy of receiving back into its employ those who left to take part in the war. It has gone farther, however, in attempting to place returning soldiers, not in the positions which they occupied prior to the war, but in positions for which they would be fitted had not the war interrupted their connection with the firm. This policy has not been followed blindly, but has involved constant contact with employees during their absence and the keeping of individual records of all absentees. Nor is the returned employee asked to undertake work for which he may not have had necessary experience. Special courses are provided for those requiring added resources of information and training. This system has been carried to the extent of offering correspondence courses to employees prior to their discharge from the army.

The writer finds that this plan has been highly successful. He does not feel that on the whole the war has had a harmful effect upon the majority of

the men who have returned to his company. On the contrary, he states that a new feeling of self-confidence and initiative has been established. He places emphasis upon the threefold human service which is the new function of the manager of a business enterprise: service to the worker, service to the customer, and service to the state. In speaking of service to the employee he mentions proper working conditions, adequate opportunity for advancement, and a sufficient and just wage. — C. H. Paull.

Investigation into the Cases of One Hundred Boys Who Left School to Go to Work. *D. I. Cohen.* Educational Foundations, February, 1919, 30, 239–243. — G. E. Partridge.

Occupational Diseases in Pennsylvania. *A. Hamilton.* U. S. Bur. Labor Statis., Month. Labor Rev., July, 1919, 9, No. 1, 170–180. — Among the important causes of occupational diseases in Pennsylvania, the author mentions poisoning from lead, carbon monoxide, brass, mercury, arsenic, various gases, and coal-tar products. Certain occupations, such as those found in the steel and textile industries, and in mining, are important sources of occupational diseases. Special consideration is also given to anthrax. Each source of occupational disease is discussed briefly from the standpoint of occurrence in industry, source of danger, and character and seriousness of risk to workers. A careful distinction is made between the immediate and the deferred injuries to health received in various occupations. In the case of lead poisoning, for instance, the writer points out that the relation between lead colic and employment in an industry using white lead extensively is unmistakable. On the other hand, a deferred result, such as hardening of the arteries which might arise from another cause and which might not appear for several years, and then only gradually, would be difficult to diagnose absolutely as an occupational disease. For this reason, it is concluded that provision for compensation for occupational diseases will never completely solve the problem of alleviating the distress arising from such disabilities. — C. H. Paull.

Health of Ohio Coal Miners. Abstract of a report by *E. R. Hayhurst.* Ohio Pub. Health Jour., May, 1919, 10, No. 5, 199–203. — In the Ohio mines diagnostic facilities are so inadequate that recourse is usually had to large cities. Availability of hospitals varies. When the hospital is in the mining community itself, much more extensive use is made of it by miners and their families than when it is at a distance.

The physician's fees may be paid either by benefit associations and lodges, or by the individual, in case he is not thus insured. In the former case the filling of certificates proves an insufferable nuisance to the physician. General average collections in normal times are about 75 per cent. Quackery, the practice of charlatans, prescriptions by druggists, self-diagnosis, etc., are practised extensively, and may be considered due, in most instances, to a lack of funds.

A general summary is appended to this article — the conclusion of a series — giving the status of the operatives in the Ohio coal mines as set forth in this and in the preceding articles. — L. A. Shaw.

Publications of the Bureau of Mines. List No. 671700–18–1. — A general list of technical health and sanitation bulletins issued by the Bureau of Mines, brought up to August, 1918. — H. W. Haggard.

Educating the Coal Miner in Subjects Pertaining to Mining. *A. C. Callen.* Vocational Summary, January, 1919, 1, 15–17. — G. E. Partridge.

New Observations on the Life of the Bedbug (Cimex Lectularius, L.). *Albrecht Hase.* Centralbl. f. Bakteriol., Ite Abt., Orig., 1919, 83, No. 22. — A study of the life habits of the bedbug in relation to its powers of reproduction and propagation under various conditions. Circumstances such as found during the war in emergency lodging quarters, barracks, camps and ships have furnished ideal conditions for the rapid spread of infestation by bedbugs. Optima are warmth, 30° C., and abundance of food. Prompt and energetic action is necessary to prevent rapid further spread of infestation. — B. Cohen.

Alcohol and Crime. *M. J. Rowe.* The Journal of Delinquency, July, 1919, 4, No. 4, 135–151. — The author thinks it is justifiable to conclude that 60 per cent. of all crimes of violence, 50 per cent. of the crimes of sex, and possibly 10 per cent. or 15 per cent. of the premeditated crimes of acquisitiveness are directly due to alcohol. — C. E. Partridge.

Treatment of Drug Addiction. *A. D. Greenfield.* U. S. Pub. Health Ser., Pub. Health Rep., July 18, 1919, 34, No. 29, 1577–1579. — Advice to the medical profession, derived from recent decisions of the U. S. Supreme Court which define what does and what does not constitute legitimate professional practice in the administration of narcotic drugs. — L. A. Shaw.

New Rules and Regulations of the State Department of Narcotic Drug Control. N. Y. City, Department of Health, Weekly Bull., July 5, 1919. New Series, 8, No. 27, 209–211. — Nine rules and regulations for the administration of the Department of Narcotic Drug Control of the state of New York. — L. A. Shaw.

SYSTEMIC OCCUPATIONAL DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

CIRCULATION

THE BICARBONATE CONCENTRATION OF THE BLOOD PLASMA IN CASES OF IRRITABLE HEART. *F. N. Wilson, S. A. Levine,* and *A. B. Edgar.* Heart, July 22, 1919, 7, No. 2, 62. — The experiments were performed on fourteen patients with a severe grade of disordered action of the heart. The Van Slyke-Cullen method of determination of the bicarbonate concentration of the plasma was used. There was no definite reduction in the alkaline reserve of the blood in these cases. The authors conclude, therefore, that the breathlessness was not due to acidosis. — C. C. Lund.

PULMONARY SYSTEM

LUNGS AND BREATHING IN WIND-INSTRUMENT PLAYERS: A CONTRIBUTION TO THE QUESTION OF THE DEVELOPMENT OF EMPHYSEMA. *N. Jagić* and *J. Lipiner.* Wien. klin. Wchnschr., June 26, 1919, 32, No. 26, 683–687. — The authors selected forty-six musicians who had played several hours daily for many years. One had played for ten years and two had played for more than fifty years; the rest fell between these extremes. In their selection, the authors excluded those with heart or lung lesions which they could judge *a priori* not to have been due to their occupation, and also those who were not of good social and economic position. The study included a careful history of each man, a physical examination of the thorax and lungs, X-ray study of the lungs and diaphragm in ordinary and deepened breathing, and radiologic observation of breathing (movement of the diaphragm) during playing. In none of the persons examined was there demonstrable a marked or even increased emphysema. The conclusion is drawn, therefore, that the playing of wind instruments cannot be considered of etiologic significance in the development of emphysema. — B. Cohen.

CENTRAL NERVOUS SYSTEM

THE ACHIEVEMENT OF MENTAL DEFECTIVES IN STANDARDIZED EDUCATIONAL TESTS. *J. E. W. Wallin.* School and Society, August 30, 1919, 10, No. 244, 250–256. — A practical study of the mental ability of defectives, their educability, and their status. — G. E. Partridge.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

INDUSTRIAL HYGIENE STUDIES. *Wolfgang Weichardt* and *Herman Apitzsch.* Ztschr. f. Hyg. u. Infektionskrankh., May 15, 1919, 88, No. 2, 105. — II. *Injuries from Oils in Industrial Pursuits.* — A brief discussion of unsatisfactory commercial cleansing powders for removing or neutralizing irritating properties from low-grade grinding and cutting oils used as war substitutes in Germany.

III. *Prevention of Percutaneous Anilin Poisoning.* — This paper describes animal experiments on mice with substances to prevent or minimize skin injury from anilin and skin absorption of it. The conclusions reached are as follows:

1. Percutaneous anilin poisoning can be favorably influenced by aldehydes, such as formaldehyde and glucose, due to the formation of non-toxic Schiff's bases.

2. Poisoning can be prevented entirely by use of aldehydes previous to and shortly following the exposure. Later use will distinctly lessen toxic action.

3. The authors recommend the practical employment, in affected industries, of a dilute formalin wash or a formaldehyde soap after exposure. — H. F. Smyth.

NORMAL ZINC, ARSENIC AND COPPER CONTENT OF HUMAN BODY. *Van Itallie.* Nederl. Tijdschr. v. Geneesk., May 10, 1919, 63, First Half, No. 19, 1709. — Apropos of a review of an article of Delézenne's, van Itallie publishes a paragraph calling attention to the fact that he and van Eck wrote an article in 1912 (in *Verslag. en Mededeelingen van de afdeeling Wis en Natuurkunde der Koninklijke Academie van Wetenschappen,* Vol. 21, p. 759, and in the *Pharmaceutisch Weekblad,* Vol. 49, p. 1157), the subject being the normal zinc, arsenic, and copper content of the human body. They found from 17.7 to 86.6 mg. per kilo of liver in twenty-four human subjects and 81.1 mg. per kilo of liver in a fasting calf. — N. C. Foot.

DANGERS OF WELDING WITH THE OXYACETYLENE TORCH. *J. P. L. Hulst.* Nederl. Tijdschr. v. Geneesk., May 31, 1919, 63, First Half, No. 22, 1933–1941. — This is a case report with an autopsy protocol. The patient was welding with an oxyacetylene torch in a boiler, the man-hole of which was turned upward. His light was obtained from the torch, no other artificial light being used. He got along all right until the boiler was turned on its side, with the man-hole pointing sideways, when he complained of lack of air and was given a compressed-air line to improve ventilation. After a short time he came out of the boiler, complaining of oppression, chilliness and coughing. He went home, called in a physician and died in twenty-four hours. The autopsy showed marked bronchitis, extensive localized inflammation of both lungs, with edema and some fibrin. There was necrosis of the epithelium of the convoluted tubules of the kidneys, slight fatty degeneration there and in the heart-muscle. A few petechiae of pericardium and pleurae, many scat-

tered perivascular hemorrhages of cerebrum, cerebellum and pons, with increased intracranial pressure. There was a good deal of fluid blood in the auricles, with small clots, all post-mortem.

The writer then discusses the cause of death. An analysis of the acetylene gas used showed phosphine, hydrogen disulphide, nitric acid and free chlorine, all to be absent; so that he rules out these possible causes. Blood analysis was quite negative. The death was obviously caused by slow asphyxia due to a poisonous gas, and the author points out the probability of its being carbon monoxide. Pure acetyelne gas, he says, could cause death and he cites cases from the literature. He states that the pathology of this poison is practically unknown, and concludes by pointing out that carbon monoxide and carbon dioxide are more probably the causative agents in this case, the former especially. He emphasizes the necessity for prompt blood analysis in such cases, as he believes that carbon monoxide could disappear from the blood in a very short time post-mortem. — N. C. Foot.

Two Cases of Poisoning by an Explosive. *F. Reach.* Wien. klin. Wchnschr., February 27, 1919, 32, No. 9, 225–226. — Two soldiers mistook some Italian explosive, *cheddit*, for corn meal, made a soup of it and consumed respectively one and two plates of it. This explosive is a mixture of T.N.T. and a chlorate. Fatal termination did not ensue until three days later. The dirty brown color of the blood was a striking feature at autopsy. — B. Cohen.

Trinitrotoluene Poisoning. *T. M. Legge.* Ann. Rep. Chief. Inspect. Factories and Workshops, Great Britain, for 1917, pp. 21–24. — The conditions imposed by the war were maximum output, very great pressure, continuous employment day and night, and replacement of men by women in industry. There was no appreciation of the insidiously poisonous nature of T.N.T. and of the right measures of prevention by cleanliness of work, by prevention of dust and contamination of the skin with the substance. The first fatality attributed to T.N.T. occurred in February, 1915. The striking feature was the jaundice which closely resembled that observed in poisoning from tetrachlorethane. Two more fatalities were reported and the need became apparent for information as to the prevalence of T.N.T. poisoning. Consequently, an order was issued making *toxic jaundice* a notifiable disease. The reason for making toxic jaundice notifiable, and not T.N.T. poisoning, was the belief that publication of statistics of notifications of T.N.T. poisoning would be unreliable, as they would simply refer to a number of T. N. T. workers seeking medical treatment for any complaint. But figures published of incidence of toxic jaundice would furnish a real indication of serious illness due to the compound. The number of cases reported for each quarter of 1916 and 1917 were: 6^{4}, 16^{5}, 73^{21}, 86^{22}, and 83^{12}, 56^{20}, 21^{8}, 29^{4}. (Upper figures indicate fatalities and are included in the corresponding lower ones.) The figures arranged as above bring out features that annual totals would obscure. In 1916 the number of males attacked was 70, with 21 deaths, and of females 111, with 31 deaths; and in 1917 there were 45 male cases with 2 deaths, and 144 females with 42 deaths. High mortality for persons under eighteen in 1916 led to restriction of employment of persons under that age. Figures cannot be given as to the numbers employed, but those coming in contact with the T.N.T. are estimated at more than 50,000. At this figure, the incidence of toxic jaundice was about 3.7 per 1,000 and the mortality about 1.0 per 1,000.

For every case of toxic jaundice, it is believed there were at least thirty cases showing minor symptoms, like pallor with cyanosis, depression or gastric derangement. None of these proved fatal, and, as a rule, they quickly recovered under treatment and returned to work. It is interesting to note that in one National Filling Factory the sickness figures fell from 11 per cent. in August, 1916, to 1 per cent. in January, 1918. Incidence has been comparatively small where T.N.T. is manufactured, as the nature of the processes does not involve the same contact with the material as does the use in filling.

The great fact brought out by close study of the precise occupation of those with toxic jaundice is the importance of skin absorption, which is difficult to overcome. It is easy to suggest the wearing of gloves, and gloves were provided and worn by the million. They never adequately protected the skin, and eventually were regarded more as a source of danger than a safeguard, and their use was given up. It was the same also with the continuous wearing of respirators, which has proved an impracticable remedy. Fortunately, exhaust ventilation, locally applied, has proved more satisfactory. — Barnett Cohen.

Doping in Aircraft Works. *W. S. Smith.* Ann. Rep. Chief. Inspect. Factories and Workshops, Great Britain, for 1917, pp. 18–20. — Manufacture of dope containing tetrachlorethane ceased in September, 1916. During the period such dopes were used, seventy cases of toxic jaundice, including twelve deaths, came to the knowledge of the Factory Department, in addition to numerous cases of suspension and transference to other work for illness due to the same cause. The new dopes are said to be more nauseating in smell and taste than the old. The acetone substitutes (ketonic derivatives) used in the new dopes seem more pungent in odor than the ordinary acetone previously used. The substitutes appear to be impure mixtures of methyl ketone, methyl-ethyl ketone and higher homologues. Amyl acetate is also used in the pigmented varnishes and colors, and benzol is a constituent of all dopes and aeroplane varnishes.

Efficient ventilation is stressed as the most effective means of keeping down the incidence of poisoning by these fumes. It has been found that if twenty-seven or more changes of air per hour can be maintained in the doping rooms, the danger from poisoning is minimized. Efficiency in design of the ventilation system is discussed and a general plan of such a system is suggested.

Spraying of the dope has been attempted in some factories. This procedure gives off more fumes, and the atmosphere in the vicinity soon becomes misty. In such cases a high standard of ventilation is still more necessary. It is probable that localized ventilation will be introduced for the spraying processes.

Physicians examined a number of workers in three dope rooms in the London area and concluded that: (1) A mild degree of anemia exists among aeroplane dope workers, and (2) the anemia is of no practical importance, except as an indication that any relaxation of the regulations might be accompanied by cases of serious illness. — Barnett Cohen.

DUST HAZARDS AND THEIR EFFECTS

Fourth Report of the Committee for the Investigation of Atmospheric Pollution. Meteorological Office (England). Report on Observations, 1917–1918. Supplement to The Lancet, June 14, 1919, 196, No. 4998, 1–23. — A report dealing with the amount of deposit of solid material from the air in England. A detailed description of the apparatus for the observation and recording of air pollution is given. — J. C. Aub.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

Tuberculosis: Its Predisposing Causes. *F. C. Smith.* Michigan Department of Health, Public Health, August, 1919, New Series 6, No. 8, 356–359. — At an early age practically all people become slightly infected with the tubercle bacillus. Safety depends, therefore, on the maintenance of a high degree of resistance. This may be accomplished by the daily observance of general hygienic principles, toward which end recommendations are made in this article. — L. A. Shaw.

Some Activities of the Michigan Anti-Tuberculosis Association during 1919. *E. R. Van der Slice.* Michigan Department of Health, Public Health, August, 1919, New Series 6, No. 8, 343–349. — Activities of the Michigan Anti-Tuberculosis Association under the stimulus of war demands. — L. A. Shaw.

Social Hygiene and the War. A reprint from Social Hygiene, April, 1919, 5, No. 2. — G. E. Partridge.

The Massachusetts Plan. *A. N. Thomson.* Social Hygiene, July, 1919, 5, No. 3, 317–335. — A special subdivision for fighting venereal diseases was organized within the Division of Communicable Disease of the State Department of Health. The plan of organization provided for:

1. Continuance of free diagnostic facilities.
2. Establishment of free treatment facilities.
3. Reporting of venereal diseases.
4. Elimination of quacks and charlatans.
5. Prevention of treatment by drug clerks.
6. Examination and treatment of prisoners.

The state of Massachusetts received $36,000 under the Chamberlain-Kahn Bill. In vice repression, education, records and treatment of venereal diseases, the government program was followed. From the start it was felt that the primary work would have to be conducted along two main lines — education and treatment. Much stress was laid upon the publicity campaign carried on through the newspapers and film exhibits, by means of which the fight against venereal diseases was brought straight into the open.

In the manufacturing plants the reaction to venereal disease propaganda was invariably satisfactory. In this respect the following agencies were instrumental in the educational campaign: the Section on Men's Work of the Social Hygiene Division, the Section on Women's Work of the same Division, the War Department Commission on Training Camp Activities, the Massachusetts Health Committee, the Boston City Club, the Boston Press Club, the State Committee of Public Safety, etc.

In the matter of treatment, the reporting law was found very effective in detecting new cases and in controlling cases already under treatment. There are at present in operation seventeen clinics in the state. Safeguards are thus placed about the non-infected, and the infected are rendered non-infectious. — L. A. Shaw.

Annual Report, State of Alabama, Bureau of Venereal Disease Control. January 1–December 31, 1918, 164–167. — The Bureau of Venereal Disease Control of Alabama is supported by the $23,247.15 which Alabama receives under the Chamberlain-Kahn Fund. The activities of the department are confined to the following lines: (1) Education; (2) Elimination; and (3) Co-operation. A remarkable change of attitude toward this class of diseases is noted, and great results are looked for. — L. A. Shaw.

Venereal Diseases. U. S. Public Health Ser., Public Health Rep., July 25, 1919, 34, No. 30, 1623. — The Supreme Court of Nebraska, in a recent case, upholds the right of local health authorities to quarantine a person infected with a venereal disease. — L. A. Shaw.

Some Changes in the Plans of Campaign for Control of Venereal Diseases. New Jersey State Department of Health, Public Health News,

August, 1919, 4, No. 9, 246–248. — When the campaign for control of venereal diseases was inaugurated in New Jersey, it was thought necessary to develop a large central organization to carry on the work. It is now deemed advisable to look to each community to assume control of its own venereal disease problems, and to co-operate with the State Department of Health. — L. A. Shaw.

A Development in the Venereal Disease Crusade. *M. R. Lakeman.* Commonhealth, Bull. Mass. State Department of Health, May–June, 1919, 6, No. 3, 116–117. — Clinical facilities developed under the state Department of Health of Massachusetts for the treatment of venereal diseases are considered adequate to render non-infectious all cases which come to hand. There are many cases, however, which will not of their own volition seek treatment. Such cases must be sought out by the social worker and the so-called special investigator. — L. A. Shaw.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

Training the Foreman. *J. E. Calder.* Safety, July–August, 1919, 7, No. 6, 135–138. — The efforts of safeguarding industry are only partly engaged with rails, guards, goggles and dust fans. They are chiefly concerned with ignorance, obstinacy, sullenness, and smartness. A well-trained foreman can do much to encourage the safety habit in his workers. — G. M. Fair.

From the Foreman's Point of View. *W. A. Clark.* Safety, July–August, 1919, 7, No. 6, 139–142. — A short safety talk given to employees of the Duluth, Missable and Northern Railway Company by their general car foreman. — G. M. Fair.

Overwork the Cause of Accidents. Quarterly Bull., Louisiana State Board of Health, June, 1919, 10, No. 2, 81. — Conclusions arrived at by F. S. Lee, Consulting Physiologist, U. S. Public Health Service, relative to the relationship between accidents and overwork. — L. A. Shaw.

No-Accident Campaign on U. S. Railroads. Labour Gazette, August, 1919, 19, No. 8, 866. — Statistics of the No-Accident Week Campaign of June 22 to 28, held by the U. S. Railroad Administration through its Safety Section. — L. A. Shaw.

Libraries in Safety Work. Am. Industries, August, 1919, 20, No. 1, 23. — A brief statement of ways in which libraries can assist in the safety movement. — C. H. Paull.

Power Drives for Sewing Machines. *Chester C. Rausch.* Safety, June, 1919, 7, No. 5, 121–127. — A discussion of power-driven sewing machines and the problems of safety engineering connected with the protection of the operators. — G. M. Fair.

Accident Reduction at the New York Navy Yard. Safety, June, 1919, 7, No. 5, 127–129. — A standard accident register was adopted for use in federal arsenals and navy yards. The methods of keeping the statistics accumulated by the New York Navy Yard are discussed in this article. Free use was made of graphical representations for the purpose of safety education. — G. M. Fair.

Reducing the Hazards of Peace. *Fred R. Johnson.* Survey, July 12, 1919, 42, No. 15, 566–567. — Mr. Johnson gives an account of the recent safety campaign to reduce street accidents in Detroit. The article should be suggestive of the possibility of enlarging the scope of such a campaign to include all classes of preventable accidents. Through publicity Detroit showed a remarkable decrease in fatalities during the campaign month. — C. H. Paull.

Recent Progress in the Manufacture of Glasses for Protecting the Eye from Injurious Radiations. *W. W. Coblentz.* Jour. Franklin Inst., August, 1919, 188, No. 2, 255–261. — The subject of eye protection against injurious radiations has become national in importance and manufacturers of eye protective glasses are meeting the most stringent requirements. Dr. Coblentz gives the transmission curves of a variety of glasses and discusses the characteristics of such glasses as singly or in combination afford protection from injurious radiations. — G. M. Fair.

On Several Cases of Evaluation of Incapacity for Work After Ocular Accidents. *A. Demault.* Arch. d'opht., January–February, 1919, 36, No. 7, 418–437. — "Under French law, total incapacity for work corresponds, not to 100 per cent. partial incapacity, but to 133 per cent. incapacity. From this fact there results a difficulty in appraising almost total incapacity.

"The usual notation of visual acuity, by the proportion between the distance at which an optotype is seen by the patient and by a normal eye, is much preferable to those which have been proposed to replace it. But its figure does not express the functional value of the eye. It gives too much importance to inferior visual acuities.

"To have equal gradations of the functional value of the eye, perhaps the best method is to arrange the visual acuities in geometrical progression. Nevertheless, this principle is not strictly accurate, even from the physiological point of view. From the medico-legal point of view, it cannot be applied except within arbitrary limits.

"The enucleation of one eye being estimated usually at 33 per cent. disability, unilateral loss of sight with retention of an apparently normal ball should be estimated at 30 per cent.

"Practically one can consider a visual acuity of one hundredth as being equivalent to blindness, and that of one-tenth as representing about a third of normal vision." — T. J. Putnam.

Army Gas Masks Unsuited for Use in Industries. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 240–243. — Owing to the many misconceptions regarding the use of the army gas mask in the industries, the Bureau of Mines is issuing a brief statement of the industrial use and limitations of dust respirators, gas masks, and oxygen-breathing apparatus. — L. A. Shaw.

INDUSTRIAL SURGERY

Hyperpyrexial Heatstroke. *K. C. Hearne.* Brit. Med. Jour., April 26, 1919, No. 3043, 516. — The author's observations in Mesopotamia lead him to believe that heatstroke is entirely due to suppression of sweating, which may be present from one to forty-eight hours before the attack. With sweating suppressed, the bodily temperature tends to adjust itself, in accordance with physical laws, to the temperature of the atmosphere, which may be 115° to 120° at the time; or even to rise higher, as a rise in bodily temperature produces increased respiration and nitrogenous exchanges, resulting in a further increase of endogenous bodily heat. The processes continue until, when a temperature of about 108° or more is reached, sudden unconsciousness, delirium, and convulsions appear — the result of the physical action of the heated blood upon the specialized brain cells. The author has repeatedly observed the preexistence of suppression — in one case for as long as eighteen hours before the attack — while in other instances he has obtained a history of it. It is probably due to the exhaustion of the sweat mechanism. Diaphoretics have no effect.

The author recommends frequent inspection — hourly, under extreme conditions — of those exposed to heat. Anyone who is discovered to have a temperature of 103° with complete suppression is stripped and covered with a wet sheet. An electric fan may be used if needed. The sheet may be raised on cradles and kept wet by an automatic spray. In the ward under his charge the author reduced the number of cases of heatstroke by these means, from nine in a week to two in two months. — T. J. Putnam.

Picric Acid Treatment of Burns. *V. G. Thorpe.* Jour. Roy. Nav. Med. Serv., April, 1919, 5, No. 2. — Picric acid dressings dry quickly and become adherent. They should be left on and, as long as they are kept dry, need not be removed. The method of procedure in applying a picric acid dressing is as follows:

1. Use sterile gloves.
2. Cut away the blisters with scissors.
3. Wash the burned surface with 1–40 carbolic lotion.
4. Dip soft white wool in picric acid solution, drain off the superfluous fluid, and apply the wool sopping wet to the raw surface of the burn, pressing close to exclude air bubbles. Do not remove the dressing until the wool becomes loose with the process of healing. In the event of suppuration, remove the wool and, after careful washing, repeat the above process.

The writer has obtained particularly supple scars from the above treatment. — W. Herman.

The Treatment of Burns. *A. M. Fauntleroy* and *A. W. Hoagland.* Ann. Surg., June, 1919, 69, No. 6, 589–595. — This article is best summarized by the authors' own conclusions:

" Our experience demonstrates to us the value of the following. The need for the quick institution of immediate general supportive measures in patients suffering from extensive burns. The value of fluids in large quantities by mouth and bowel, even before the so-called toxemia or acidosis symptoms commence to appear. Later, during the absorption period, from large infected areas, the addition of the continuous use of small doses of morphine sulphate seemed to us to be of distinct advantage. It certainly serves to keep the patient quiet and thereby reserves his energy for later use. Too much stress cannot be laid on the value of these general measures, used as a prophylactic procedure, immediately following injury, before the advent of those well-known toxic symptoms, which are sure to follow in one extensively burned. We deem them far more important than any value obtained by laying too much stress upon the burned area during this initial period. It was again proved to us: That patients extensively burned quickly go into a severe shock the first twelve hours. That reaction from this period may be followed by an equally fatal period on about the fourth or fifth day. That recovery from this period is later followed about the fourth or fifth week by a period in which the element of exhaustion is a very important consideration.

" Our local procedure demonstrated the following: Initial antiseptic cleansing, alcohol, boric acid solution, salt solution, Dakin's, Wright's solution all proving equally efficacious. Gentle dressing manipulation during this period with traumatism reduced to a minimum. As soon as possible the application of a simple protectant, paraffin, ointment, gutta percha, or rubber strips.

" Our local measures again proved to us: That no one procedure, wet or dry dressing, wax, ointment, or that no one solution proves equally valuable for all cases. That the individual question of how the particular area reacts to the solution used is an important one. That there is a distinct difference between the mild stimulation and healing effect of bland protectants such as wax, liquid petrolatum, and vaseline. That the so-called " switching time " in the application of these various dressings is a distinctly important one. That some patients cannot tolerate open-air exposure. That the absolute noninterference and non-removal of semi-adherent tags of skin is usually the best procedure." — H. A. Bulger.

Baths for the Emergency Treatment of Acid Burns. Safety, July–August, 1919, 7, No. 6, 154–

155. — The E. I. du Pont de Nemours & Company plants in which strong acids or caustics are handled are equipped with shower baths of special design for use in case of accidents. The article gives a description of the arrangement and construction of the showers. — G. M. Fair.

Remarkable Case of "Employee No. 1653." Bull. N. Y. State Ind. Com., July, 1919, 4, No. 10, 182–186. — This article gives an account of the treatment of an employee of the Railway and Light Company of Rochester, New York. This employee was severely burned and scalded by ashes and steam in the ash pit of one of the company's power plants. His injuries were so serious that, taking into account the fact that he was 60 years of age, it was feared he would not survive the shock. The burns were dressed, however, and carefully covered with wax. This treatment was repeated consistently, and the patient recovered so rapidly that he was able to return to work at the end of sixty-three days. The attendant physician expressed the greatest satisfaction at the result of the wax treatment. The account of this case is made more graphic by a number of photographs showing the severity of the burns and the completeness of the healing. — C. H. Paull.

FATIGUE AND OCCUPATIONAL NEUROSES

Fatigue Elimination. *Mrs. F. B. Gilbreth.* Industrial Reconstruction Problems, Report of the Proceedings of the National Conference of the Society of Industrial Engineers, March 18, 19, 20 and 21, 1919, 183–186. — The necessity of maximum industrial efficiency during the war has stimulated popular interest in fatigue elimination. Other contributing causes of the movement to reduce fatigue are: (1) The introduction of a large body of women into industry; (2) special attention demanded by the returned disabled soldiers; (3) increase of interest in scientific management and efficiency methods. The elimination of fatigue is a problem not only for individual plants, but for entire communities and industries.

The program consists of two parts — first, eliminating unnecessary fatigue from the operation and second, providing for recuperation from necessary fatigue involved therein. Present procedure and possible ultimate improvements must be carefully considered. Rest periods should be determined upon with reference to the nature of the work. — L. A. Shaw.

Muscular Tonus in Relation to Fatigue. Abstract of a paper by *A. H. Ryan, S. Jordan* and *A. B. Yates.* U. S. Public Health Ser., Public Health Rep., July 25, 1919, 34, No. 30, 1622–1623. — Muscular tonus in relation to fatigue was investigated in the hope of finding further methods for the detection of the more pronounced degrees of fatigue resulting from the day's work, and for the purpose of studying cumulative fatigue. An account is given of the apparatus used and of the results obtained. — L. A. Shaw.

NUTRITION AND METABOLISM

Metabolism of Female Munition Workers. *M. Greenwood, C. Hodson,* and *H. E. Tebb.* Brit. Med. Jour., May 31, 1919, No. 3048, 682. — "The rate of metabolism was determined by the method of direct calorimetry. Making the due allowance for metabolic needs during non-working hours recommended by the Royal Society Food (War) Committee, the workers were found to fall into four classes, for each of which the daily net requirements per average woman were 2530 calories, 2810 calories, 3200 calories, 3425 calories. The results were concordant with the inferences drawn from a study of food consumption in a large explosive supply factory during the war." — T. J. Putnam.

WOMEN AND CHILDREN IN INDUSTRY

Women's Work and Welfare. N. Y. City, Department of Health, Weekly Bull., July 5, 1919, New Series, 8, No. 27, 211–212. — A report recently published in England entitled, *Women in Industry,* concerns the experience of that country with the enormous amount of labor done by women during the war. Women, except where great physical strength is called for, are the equals of men. While it was found that extensive employment tended to lower birth-rate and increase infant mortality, it was concluded that these evil effects were due largely to ignorance, poverty, and bad general sanitary surroundings — conditions which could be made obsolete by proper regulations and laws. — L. A. Shaw.

War-Time Participation of Women in Industry. *C. B. Lord.* National Society for Vocational Education, Bulletin No. 28, June, 1919, 77–82. — The writer offers conclusions based upon the experiences of the Wagner Electric Manufacturing Company of St. Louis in employing women. There are several distinct types of women workers. Suc-

cessful work depends considerably upon the selection of the right type and also upon the temperament of the foreman. It is not necessary to segregate women in the shops. Equal pay for equal work must be the rule; in other words, the product produced by women should cost the same as that produced by men. Costs of nurses and welfare workers must be included.

A vital factor in the proper management in the shop is the uniform. There are many questions of detail that are highly important. Sanitary conditions must be carefully studied, because it is the neglected 5 per cent. of the conditions that may be the most important. Temperament of women workers as a class must be taken into account in all regulations, and much attention must be given to cheerfulness of surroundings. All machines used by women in the Wagner shops are painted with white enamel. — G. E. Partridge.

Women in Industry. *S. D. Hubbard.* N. Y. City, Department of Health, Month. Bull., May, 1919, 9, No. 5, 125–126. — If women are to fulfill their dual position — worker and mother — which society imposes upon the laborers of to-day, a campaign of education is necessary in order that both employer and female employee may understand the conditions affecting the health of women. Suggestions which will enable employers to safeguard the health of women workers are herein given, together with a list of special topics to be presented as educational propaganda. — L. A. Shaw.

Initial Training and Upgrading of Women Workers in Factory Industries. *Anna L. Burdick.* National Society for Vocational Education, Bulletin No. 30, June, 1919, 54–61. — The United States census of 1910 reports about 8,000,000 women engaged in gainful occupations. The number of men in the same class was about 30,000,000. In 1914, 16.7 per cent. of those employed in manufacturing industries were women.

Because of the expansion of woman's work and the replacement due to the removal of large numbers of skilled men from industrial service during the war, increasing numbers of inexperienced and unskilled women were inducted into factory work. One result of this has been the introduction of employment service departments to develop new sources of labor, to determine and direct the personnel of the working force, and to standardize the conditions of employment necessary to safeguard the health and the lives of the workers. Another result has been improvement in the processes of production. This has necessitated a realignment of tasks suitable to the workers, increased subdivision of processes, and an increase in the proportionate number of foremen and other supervisors. Changes in construction and equipment have taken place, with the ultimate aim of making the work hazard-proof and error-proof. Systems of training have been introduced together with methods of inducting unskilled women workers into industry and upgrading them during the period of their employment.

The work of the government school for training precision optical operatives is described, also the methods used in the railway service. — G. E. Partridge.

Extent and Effect of Substitution of Women and Girls in Industry. *Miss Anderson.* Ann. Rep. Chief Inspector of Factories and Workshops, Great Britain, for 1917, 10–18. — Very numerous instances are reported for 1917 where women carried out practically the whole of the work of a factory or a branch or process. The new developments for the year are in the employment of women in industries like the following: ship-yard work, blast furnace and forge works, copper works, spelter works, brickmaking, ferro-concrete and other construction work. Relatively few failures have been reported against these workers. Where failures have occurred, the causes may be classified under: (1) insufficient care in selection of appropriate women for the kind of work needed; (2) insufficient care in instruction and training; (3) insufficient care or understanding in adapting and organizing conditions and methods of work to women's needs; (4) opposition on the part of men workers.

Improvement in conditions, organization and methods of work is gradually making clear the fundamental contrast, hitherto hidden by traditional and conventional views as to which were womanly occupations, between new occupations that can and may become more or less permanent for women and those which are preferably only temporary. It has been observed in non-munition factories, where women have been newly introduced as substitutes, that a high proportion of them have come direct from home life and domestic service. This will have an important bearing on the problem of demobilization. A noteworthy fact commented upon is the apparently limited extent of women substitutes in the higher posts of industry. There are a few women managers and foremen in some plants, but they appear to be exceptional cases. A field opening to women is that of welfare supervisor in factories.

Introduction of labor-saving appliances has facilitated very greatly the substitution of women. Adaptation of the sizes and shapes of appliances to the needs of women is another aid. It appears that a number of serious accidents occurred to women workers on account of improper protection of machinery or ignorance of the worker in regard to full details of the process.

As to the physical effects upon the workers, it would seem from the records accessible on general health and sickness that the rates point to an improvement in health rather than the contrary. Analysis is not yet possible of the exact increase in injury to women due directly to accidents from machinery and other causes in occupations newly opened to them, nor of the share which fatigue from exceptional hours necessary in the stress of war-time production should bear in causing industrial accidents. Close following up of health records in absenteeism is indicated as the best aid in health and welfare administration.

Welfare work or "social management" of a factory is stressed as one of the most important phases of administration. Two points that have been studied in the past year are: (1) protective clothing for women workers; and (2) seats for factory workers, especially women. Information has been collected in an effort to formulate later reasonable regulations. — Barnett Cohen.

THE INDUSTRIAL REPLACEMENT OF MEN BY WOMEN IN THE STATE OF NEW YORK. Bull. 93, Dept. Labor, Bur. Women in Industry, State of New York. — In this sixty-nine-page pamphlet is quoted the experience of 117 plants in twenty-six communities in which over 13,000 men were replaced by women. The study covered some seventeen industries. A brief list is given of those processes on which women have found employment in the place of men.

Statistics are quoted which tend to show that the earnings of women engaged in the same capacity as men, and for production in some cases greater, and in others less than men, were often correspondingly lower. Of the 6771 women who were discharged from the number of those who replaced men, only 32.9 per cent. failed because of their own physical, mechanical or temperamental shortcomings.

One of the conclusions arrived at as a result of this study is that, wages and general satisfactoriness remaining equal, women will continue in work formerly done by men. — L. Greenburg.

BRIEF FOR THE EIGHT-HOUR DAY FOR WOMEN. U. S. Bur. Labor Statis., Month. Labor Rev., May, 1919, 8, No. 5, 204–209. — A report of the findings of the Illinois Industrial Survey. In Chicago more then three-fifths of the employers were voluntarily setting the hours for women at less than nine, although the Illinois law permitted a ten-hour day. In these cases we are justified in assuming that business efficiency is the prime consideration, and, since health is an important factor in efficiency, we may conclude that hours in excess of nine impair the health of women workers.

The commission made a study of 4711 women working in Illinois establishments who were asked what effect the occupation had upon their health. In Chicago 51.8 per cent. of the women working sixty-one hours or more per week made complaints, compared to 15.2 per cent. among those working forty-four to forty-eight hours. Likewise a far higher proportion of the permanence was found in the latter group than in the former.

Forty-one industrial physicians, supervising the health of women workers, were asked their opinion as to the best length for the working day for women. Of the thirty-five who answered twenty-six spoke in favor of eight hours.

In three establishments a study was made of the comparative output under different schedules of hours. A decrease from fifty-four or fifty-five hours per week to forty-eight hours yielded an increase in total output of from 2 to 13.4 per cent.

As a result of their investigation, the commission presented four recommendations and a bill, embodying these points, to be passed as a law. — L. A. Shaw.

THE EMPLOYMENT OF CHILDREN IN ENGLAND. School and Society, August 30, 1919, 10, No. 244, 266–267. — The British Home Office has issued a a circular, addressed to local education authorities, with reference to the Education Act of 1918. Although some option is allowed the local authorities, an attempt is made to discourage the employment of children before school hours in the morning, on the ground that it interferes seriously with educational work and often affects the health. The circular deals also with the prohibition of specified occupations, and offers suggestions for establishing a maximum of work, two hours on regular days, five hours on Saturday, and only special occupations on Sunday. Apparently the provision for local by-laws has confused the results of the general act. — G. E. Partridge.

TENTATIVE STANDARDS FOR THE PROTECTION OF CHILDREN ADOPTED BY THE INTERNATIONAL CONFERENCE ON CHILD WELFARE. American Child, August, 1919, 1, No. 2, 96–99. — At a conference held by the Children's Bureau in Washington, May 5–8, at which a number of foreign delegates were present, tentative standards were adopted which should govern children entering employment. The standards adopted are given here in detail. — L. A. Shaw.

CHILD LABOR AND SCHOOL ATTENDANCE. *E. N. Clopper.* American Child, August, 1919, 1, No. 2, 100–106. — It is necessary to define child labor in order to understand the relation existing between child labor and school attendance. Nobody looks upon his own form of child employment as exploitation, and we are all in the habit of confining child labor within the four walls of a spinning-room in a Southern cotton mill. From the information given in the United States Census, we may venture to define child labor as the work done by children under 16 years of age, with or without pay, under direction or independently, which deprives them of their normal measure of play, schooling, rest and healthy development. Generally speaking, child labor excludes school attendance.

The U. S. Public Health Service has already done much toward standardizing the minimum health requirements of children in industry. Along with this movement there is growing a general tendency to establish standards of education as well. This movement for minimum standards and their coordination is not confined to our nation. It is characteristic of the new spirit in international relations. — L. A. Shaw.

THE WELFARE OF THE CHILDREN OF WOMEN EMPLOYED IN FACTORIES IN FRANCE AND GERMANY. — A pamphlet issued by the Intelligence Department of the Local Government Board, London, and prepared originally for the Welfare Advisory Committee of the Ministry of Munitions. — G. E. Partridge.

INDUSTRIAL SANITATION: ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

Planning the Industrial Plant. *H. M. Wharton.* Ind. Management, September, 1919, 58, No. 3, 237–241. — In this, the last of a series of four articles on planning industrial plants, the writer discusses among other things fire protection, toilets and lavatories, heating, ventilation and illumination. His treatment of these questions is confined entirely to their relation to plant construction. He stresses the importance of automatic sprinkler systems and of fire-walls where fire risks are greatest. Careful attention must be paid to the location and the proper equipment of fire-doors. Hydrants and hose equipment should also be adequately provided.

Toilets and lavatories must be installed with special regard to sanitation and light. Wherever feasible, water closets should be separate from locker rooms and wash rooms, and the floors, at least, should be of concrete or some material which can be easily cleaned. Walls should be of a non-absorbing material which cannot be easily defaced. Hard-face brick covered with oil paint will answer this purpose at moderate expense. Rooms containing closets require artificial ventilation. This can be obtained by locating air vents, connected with a ventilating shaft, directly behind the seats. In this way offensive odors are drawn off by a suction fan before they have a chance to circulate in the room.

Ordinary shop rooms where workers are not congested will usually ventilate themselves naturally through cracks between windows and casings, through open doors, etc. Where heavy dust, smoke or fumes exist, special mechanical ventilation must often be applied at their source in order to prevent them from circulating in the room. Artificial heat is commonly obtained in factory buildings from steam delivered to coils or radiators located near points which admit the greatest amount of cold. While hot water and heated air are also employed, they are relatively more costly.

Special care should always be given to natural lighting in constructing a factory. Window space should be adequate. Where necessary, direct sunlight may be excluded by special lighting construction and the use of ribbed glass. Because of the more involved problems connected with artificial lighting, expert advice regarding its choice and installation should be obtained. — C. H. Paull.

What it Pays to Know About Factory Lighting. *C. E. Clewell.* Factory, September, 1919, 23, No. 3, 496–499. — These notes have to do particularly with the arrangement and use of window space. Some of the factors which Mr. Clewell lays stress upon are: (1) relation of window space to floor space, (2) exposure and obstructions outside the building, and (3) kind and condition of glass. He touches upon the relative merits of common rough plate glass, ribbed glass, glass re-enforced with wire, and prism glass. He concludes that, under ordinary conditions, ribbed glass is much more desirable than the rough or hammered glass, providing the cost is approximately equal, and that, under certain conditions, prism glass is highly desirable.

The author suggests that a more accurate estimate of the lighting value of window space can be obtained by using as a basis the ratio between exterior and interior intensity of natural lighting at a given time of day, than can be obtained by using a ratio between window area and floor area. The ratio between exterior and interior intensity of natural lighting takes into account not only window space and outside conditions, but also important factors such as the color of the walls within the building. Attention is called to the variation of light at different times of the year. The chart given on page 497 shows graphically the diminished intensity of light for different seasons of the year at different times of the day. — C. H. Paull.

Better Ways to Light the Work. Factory, September, 1919, 23, No. 3, 604, 606, 610, 615. — The series of short contributions under this heading deal with special phases of problems of shop lighting. The comments under "When Lights Are Needed Most" call attention to the importance of making adequate provision for emergency lighting. The emergency factory-lighting rules used in New Jersey are cited here as a minimum to be followed in factories. — C. H. Paull.

Definite Means of Insuring Adequate Illumination in Work Places. *C. C. Rausch.* Safety, July–August, 1919, 7, No. 6, 142–148. — A new foot-candle meter has recently been put on the market. It permits measurement of light falling on any surface and is so compact and so light in weight that it can easily be carried about. It should be of assistance in insuring the adequate illumination of work places. — G. M. Fair.

North Carolina State Board of Health. Health Bull., July, 1919, 34, No. 7, pp. 32. — This pamphlet is devoted to a discussion of the sanitary disposal of human excreta. Following is the table of contents which gives the subdivisions of the subjects as herein treated: Introduction; The State-Wide Privy Law Explained; Sanitary Principles of the Construction of Privies; Types of Improved Privies, Plans and Specifications for Approved Privies; Summary of Rules for Maintenance of Different Types of Privies; Economics of Privy Construction and Maintenance; Machinery and Methods for Enforcing the Law. — L. A. Shaw.

A Fine Installation of Factory Plumbing. Dom. Engin., September 13, 1919, 88, No. 11, 491–494, 532. — A description of the sanitary equipment of the Stewart Manufacturing Company in Chicago, Ill. — G. M. Fair.

MEDICAL DISPENSARIES AND HOSPITALS IN INDUSTRIAL PLANTS

INDUSTRIAL MEDICAL SERVICE. Lancet, June 21, 1919, 196, No. 4999, 1084–1085. — An editorial advocating more preventive medicine and public health work directly in factories, to co-operate with the work done in the community at large on water supply, insanitary dwellings, sewage disposal, etc. This work is really preventive medicine upon the individual worker, and requires specially trained physicians. There should be more post-graduate education available for the necessary special training. — J. C. Aub.

KEEPING WORKERS WELL. Factory, September, 1919, 23, No. 3, 596, 598, 600. — A brief statement of the success attained by one plant in reducing absence and increasing output through the opening of a hospital and the establishment of a well-organized system of medical service. — C. H. Paull.

INDUSTRIAL NURSING

THE PUBLIC HEALTH NURSE'S PART IN VENEREAL DISEASE CONTROL. Commonhealth, Bull. Mass. State Department of Health, May–June, 1919, 6, No. 3, 118–119. — The U. S. Public Health Service in a recent publication calls attention to the inestimable value of public health nurses in reducing the venereal disease rate in cantonment zones, and in keeping down sickness in general. If the public health nursing field is to go on expanding as it should, hospitals must offer proper training facilities. — L. A. Shaw.

INDUSTRIAL, PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

THE GREATER COMMUNITY. *W. L. Bailey.* Survey, August 9, 1919, 42, No. 19, 706–707. — Under the inspiration of Dr. F. E. Sampson of Creston, Iowa, there has been developed a form of community health service which reaches six counties. The membership in the Greater Community Association includes churches, schools, lodges, clubs, Red Cross chapters, patriotic societies, parent-teacher associations, and individuals. Among its activities are the maintenance of a community hospital and training school, a school children's dispensary and free clinic, a free dispensary for tuberculosis, a welfare station for children under school age, a health education center, and a psychopathic clinic. — C. H. Paull.

A MODEL MINING TROPICAL VILLAGE. *Walter E. Masters.* Jour. Trop. Med., May 15, 1919, 22, No. 10, 89–93. — A brief survey indicating what can be done by sanitation and hygiene in a country once known as "The White Man's Grave." The author considers this next to the world-wonder of Panama. Nowhere has he seen such good results accomplished at so little maintenance expense as at Prestea Model Mining Village, Gold Coast Colony. — H. A. Bulger.

MOSQUITO ERADICATION IN SOUTHEASTERN PENNSYLVANIA. *B. Franklin Royer* and *C. A. Emerson, Jr.* Am. Jour. Pub. Health, May, 1919, 9, No. 5, 327–332. — The authors describe in some detail the work carried out to lessen the mosquito nuisance in the Delaware River shipbuilding district from Hog Island to below Chester, taking advantage of existing but neglected dykes and flood gates.

From their experiences in inaugurating and carrying out the above work they draw the following conclusions:

1. Mosquito eradication work to be successful should embrace the entire general area where breeding places occur. Limiting the work to political subdivisions, operating independently, is not practical.

2. A comprehensive co-operative project, embracing private corporations, municipal and state agencies, is practical, providing the work is performed in accordance with a comprehensive plan previously approved by the various interests concerned, and general direction of the project placed in some unbiased central organization, so formed either by law or mutual consent that its jurisdiction covers the entire territory. This would seem to indicate that general supervision should be placed in some permanent central authority having uniform powers and responsibilities, such as the state department of health.

3. Benefits of mosquito eradication work are far-reaching, and include increase in value not only of properties within the immediate district but also of general real estate within a wide area. The same applies to the benefits to public health.

4. The powers possessed by most state organizations are not suitable for undertaking work of this nature as a routine procedure. It is desirable that the cost should be borne directly by the properties benefited in proportion to the benefits received, and legislation should be enacted whereby the central authority can assess benefits either by collection of taxes in accordance with the usual practice, or by condemnation and resale of the property. Such legislation should also provide funds for maintenance purposes.

The work carried on under the conditions set forth in this paper has had beneficial results, as is proved by the fact that complaints from residents and work-

ers in the districts were almost unknown this past summer, and that preparations are now being made for the cultivation of large areas of land which for years have remained idle, covered with a luxuriant growth of weeds and water vegetation.

Plans are being prepared for extension of the work next year through the district to the south of that brought under control this past season, and it is hoped that legislation will be enacted whereby this work undertaken as a war measure can become a permanent adjunct of the work of the state department of health, being gradually extended throughout all portions of the state where mosquitoes are sufficiently abundant to interfere with the comfort and the health of the citizens. — H. F. Smyth.

War Activities as They Have Affected Housing, Health and Recreation. *E. W. White.* The Playground, August, 1919, 13, No. 3, 200–202. — "Those who think that the working people of the world are demanding more pay and shorter hours for the sake of the extra income or for a greater number of loafing hours are utterly blind to that deeper motive that is swaying the common thought of the time. The human race has turned a new corner, and now the purely material advance will no longer satisfy. The solution is this: Every avenue must be thrown open for feeding the craving for the inspirational that art satisfies. There must be a shorter working day and more vacations, and there must be organized community service." — G. E. Partridge.

Government Housing at Home and Abroad. *W. E. Shannon.* Am. Industries, September, 1919, 20, No. 2, 25–27. — The writer discusses the financing and the location of housing for workers. He objects to a plan by which the government assists in building for the worker, in that it would involve favoritism and would tend to be paternalistic. He further objects to the financing of housing schemes by industries on the ground that it would put the worker under unjust obligation. A scheme of loans by banks and similar organizations is much to be preferred. The development of housing projects in new areas seems to him uneconomic in cases where it is possible to build in communities where streets, sewers, etc., have already been built. The importance of building the home primarily for comfort is also stressed. — C. H. Paull.

The Seattle Plan of Home-Building. *C. Bush.* Am. Industries, July, 1919, 19, No. 12, 25–26. — An account of a scheme instituted in Seattle to stimulate building. This scheme involved three definite activities: (1) the organization of a building corporation, (2) the organization of a Second Mortgage Company, and (3) the development of a campaign to interest property owners and business men in building houses. The work was under the general direction of a More Homes Bureau. Although no work was done by the Second Mortgage Company, owing to the close of the war, the other agencies operated so successfully that no less than 2000 houses have been built as a result of the movement. — C. H. Paull.

The Labeled Privy. Health Bull., No. Carolina State Board of Health, September, 1919, 34, No. 9, 8–9. — A law has been enacted in the North Carolina State Legislature which specifies that every residence located within 300 yards of another residence must have an improved type of privy, approved by the State Board of Health. It will be the duty of a special inspector to examine each privy, first, as to its construction and second, as to its maintenance, and then to affix a label thereto. — L. A. Shaw.

INDUSTRIAL INVESTIGATIONS AND SURVEYS

Public Health and the Candy Factory. Bull. N. Y. State Ind. Com., August, 1919, 4, No. 11, 209, 219. — This is a brief review of some of the findings (not yet published) of a recent study of the candy industry in New York. Sixty-six factories, large and small, in various parts of the state were visited; the majority of them, however, were in New York City. In general, housing was found to be fair. Girls and women as a whole were not well paid. Eighty-seven and four-tenths per cent. of the women received less than $16.50, the amount which had been established as a minimum for women in Schenectady by the War Labor Board. Sanitary conditions were frequently bad, endangering not only the health of the workers, but also that of the consumer. Arrangements for the personal cleanliness of workers were apt to be inadequate, and in many cases health certificates for workers were not insisted upon in a way which would give the consumer adequate protection. New York City showed the greatest care in this matter. — C. H. Paull.

INDUSTRIAL SERVICE AND MUTUAL BENEFIT ASSOCIATIONS

Community Service as a Builder of Morale for the Institutions of Civic Life. *L. A. Halbert.* The Playground, August, 1919, 13, No. 3, 190–200. — The writer is district representative of Community Service, and his thesis is that what the War Camp Community Service has done for our military organization in war time, Community Service (Incorporated) will do for the institutions of civil life. It will promote health, arouse enthusiasm for tasks, prevent discouragement, inspire confidence in the

government and in all our social, industrial and religious institutions, provide opportunity for activities such as community singing, supervised public dancing, community club houses, public forums. It will undertake to induce people to engage in constructive leisure-time activities.

The movement is an outgrowth of the activities of the American Playground and Recreation Association which organized the War Camp Community Service, and which has established a national organization under the name of Community Service (Incorporated). This organization will promote all the interests heretofore served by the American Playground and Recreation Association, and in addition will provide suitable leisure-time activities for the whole population. A part of the work will consist in the elaboration of means of bringing together the prejudiced classes, with the purpose of encouraging employers especially to take the initiative in solving the present problems that arise from the social disparity in the industrial world. — G. E. Partridge.

The Community, Home of Lost Talents. *J. Lee.* The Playground, August, 1919, 13, No. 5, 171–176. — The great evil of our industrial civilization is defeated instinct, and because balked expression, not physical need, is at the root of all the social disturbance of the present time, the restoring of expressive life is the one great problem of the day. To some extent the remedy must be sought and found within industry itself. Business must cease to be a wholly private matter, and must be carried on more as the function of all the people, especially of those immediately engaged in production. Education also must be directed toward producing a larger life through experience in art and in play. — G. E. Partridge.

Community Service Through the Schools. *C. F. Weller.* School and Society, September 13, 1919, 10, No. 246, 301–311. — Mr. Weller is special district representative of Community Service (Incorporated). This article is a report of work in Chester, Pennsylvania, the main features of which have been described in another abstract in this journal. — G. E. Partridge.

The Best Thing That Ever Came to Chester. *Florence Samuels.* The Playground, July, 1919, 13, No. 4, 127–142. — This is an interesting account of the application, to the social problems of a city, of the War Community Service idea. Twenty-seven nationalities are represented among the working classes of the city, and the community program has been planned with regard both to the physical welfare and the Americanization of the people. The plan includes a community club for men, recreation centers in the school buildings, an Italian organization, hospitality program, organized singing, a physical recreation program, with games and folk dancing. — G. E. Partridge.

Substitutes for the Saloon. *R. Calkins.* The Playground, August, 1919, 13, No. 3, 176–190. — Experience in recent years has all gone to show that the saloon is in no sense a social necessity and that, therefore, in the present day of complete abolishment of the saloon, the prevalent statement that the need of finding a substitute for the saloon is a social problem is not quite correctly conceived. In general, it has been found that where the saloon has been abolished, the activities which it absorbed and represented have tended to return to normal channels.

Various new plans such as the following are discussed and, for the most part, approved: further development of recreational work, the new activities of the Salvation Army, attention to the establishment of places for public convenience, centers for social gatherings, means of ready distribution of sporting news. There must be a wider use of school properties, and other provisions for meeting the requirements of a return to normal life on the part of the public. — G. E. Partridge.

Keeping Workers Well Shod. Factory, September, 1919, 23, No. 3, 501. — A brief statement of a plan which one employer put into practice to help protect the health of his workers. A shoe-repair shop was installed to render service to all employees at cost. — C. H. Paull.

Employees' Benefit and Pension Schemes. Labour Gazette, August, 1919, 19, No. 8, 863–864. — A description of the mutual benefit society for health insurance which prevails in the Dominion Chain Company of Niagara Falls, Ontario; also a brief summary of the pension scheme inaugurated by the Montreal Shirt and Overall Company. — L. A. Shaw

INDUSTRIAL HEALTH LEGISLATION AND COURT DECISIONS: MALINGERING

Hours of Work and Emergency Orders. *G. Bellhouse.* Ann. Rep. Chief Inspector, Factories and Workshops, Great Britain, for 1917, 5–9. — The tendency to reduce hours, which has been a growing feature since the early days of the war, continues, and cases where women and young persons (protected persons) are employed for hours in excess of the maximum weekly limits allowed are now rare. In a survey of munition works where approximately 27,000 women and girls were employed, there were found 6 cases where the hours actually worked exceeded 60 per week; in 32 cases they amounted to 60; in 62 cases they were between 55 and 60; in 51, between 50 and 55; in 20, between 45 and 50; and in 7 they were less than 45.

Perhaps one of the most interesting features in this connection is the gradually increasing number of cases in which work before breakfast is being abandoned. It seems that this improvement results in: (1) disappearance of bad timekeeping in the morn-

ing; (2) large decrease of sickness among girls in the first hours of the morning, which was common when work started at 6 A.M.; (3) hardly noticeable reduction in output in departments where it depends on the activity of the workers, and not in proportion to the drop of one hour per day even in departments where output depends chiefly upon machine hours; (4) maintenance of better work. The experience of a number of firms is cited to support these points, showing that the " one-break " day is superior to the " two-break " day.

A further development, still in its infancy, is the cessation of all work on Saturdays, with no decrease in the total of hours worked weekly. In the clothing industry this seems to have worked out satisfactorily for the employer and the worker.

Sunday work has been reduced to small dimensions, experience having proved it to be unprofitable and even harmful. Only in special cases where continuous processes have been involved or where there has been an urgent demand for output of munitions has Sunday work been allowed.

Night work for protected persons has still been found necessary because of war conditions. Shifts of longer than twelve hours during the night have been discouraged and disallowed as much as possible. While some long shifts are no doubt undesirable, no complaints from the workers have been recorded, and no evidence of injury to health has been observed so long as the number of shifts has been limited to five turns per week. There has been no general development of the system of eight-hour shifts. Many difficulties, especially the scarcity of labor, seem to have proved a stumbling block to the wide adoption of the system.

Overtime for protected persons is much less general, and there are few cases reported where more than five or six hours a week are worked. Instead of overtime, a rearrangement of hours is being attempted with some satisfaction in non-textile mills.

There appears to be no evidence of undue or excessive fatigue (sufficiently marked to show impairment of efficiency) among the protected workers observed. Little further evidence has been gained as to the effects of overtime on output.

There has been a most remarkable change of attitude of the magistrates and press in regard to violations of the Factory Acts. Whereas early in the war prosecutions for illegal hours were strongly criticised and unsuccessful, they are now regarded with sympathy. — Barnett Cohen.

LABOR LEGISLATION OF 1918. U. S. Dept. Labor, Bull. No. 257, June, 1919, pp. 169. — An article giving a review of labor legislation of 1918, and the laws of various states relating to labor enacted since January 1, 1918. — L. A. Shaw.

REPORT OF THE DEPARTMENT OF LABOR, STATE OF NEW JERSEY, 1918, pp. 54. — A report concerning the work of the Department of Labor in the State of New Jersey from November 1, 1917 to July 1, 1918. Among the articles which this report includes are the following: Activities of the Bureau of Hygiene and Sanitation; Activities of the Workmen's Compensation Bureau; Report of the Industrial Accident Bureau; Physical Efficiency and Occupational Disease. — L. A. Shaw.

WORKMEN'S COMPENSATION AND INSURANCE

WHAT THE TERM " MEDICAL SERVICE " IN WORKMEN'S COMPENSATION LAWS INCLUDES. *M. C. Frincke, Jr.* U. S. Bur. Labor Statis., Month. Labor Rev., July, 1919, 9, No. 1, 187–205. — The writer makes an analysis of what is meant by the term " medical service " in various states and administrative districts in the United States. He bases his discussion on actual provisions in compensation laws and upon decisions which have been rendered by commissions and by courts. States can be roughly grouped into two classes: (1) those whose compensation laws are explicit and detailed with regard to medical service, and (2) those in which the laws are not explicit and detailed. When questions have been left to courts and commissions, the decisions have, in general, been as liberal to the workers as possible.

Compensation laws can be grouped under three heads as regards extent of service rendered: (1) those which make no provision for medical aid except in case of last illness, (2) those which place no restriction except that of reasonableness and necessity, and (3) those which specify time and money limitations. A well-constructed table presents this information by states. There is considerable variation and in certain states considerable uncertainty as to the time at which medical service shall begin. In six states the date of disability is specified as the beginning of the period when medical service is provided; in sixteen, the date of injury is specified; in three states no time is specified for the commencement of medical service.

The scope of medical service for various states is worked out in a chart (page 194) which shows states providing (1) medical, surgical, and hospital service, (2) medical and surgical supplies, (3) nursing, (4) medicines, (5) artificial members, (6) crutches, (7) apparatus, (8) transportation to hospital or physician. In general, medical service other than that provided by persons regularly admitted to the practice of medicine is not recognized under compensation laws. — C. H. Paull.

PROVISION FOR SECOND INJURIES UNDER WORKMEN'S COMPENSATION LAWS. *C. Hookstadt.* U. S. Bur. Labor Statis., Month. Labor Rev., July, 1919, 9, No. 1, 206–211. — This discussion deals with the problem of discrimination against disabled workers by employers because of the operation of compensation laws. Believing that a disabled worker is a greater risk and more apt to be permanently dis-

abled, employers are often unwilling to expose themselves to the operation of existing compensation laws. In thirteen states compensation is granted only for disability caused by the particular injury under consideration, regardless of previous injuries. While such a law reduces discrimination against disabled workers, it does not offer sufficient protection to the worker in cases where a second injury augments the handicap of a first injury to the extent of permanent incapacity.

In fourteen states compensation is granted for the entire disability caused by the combined injuries. This places a heavy burden upon the last employer of the injured worker. New York and four other states have provided that in case of a second injury the employer compensates only for the disability arising from that injury, while the state pays an amount which would bring the total compensation to a figure equal to the compensation for the combined injuries. By this plan the employer is relieved of unusual burden in the case of second disability. In six states, compensation for second disability is based upon the difference between the final disability and the prior disability. Eleven states make no specific provision regarding second disability. In a few other cases, somewhat different schemes are in operation. The writer favors the New York State procedure as being the least unfair to both the employer and the worker.

In caring for men disabled through war, the writer advocates that the federal government introduce a scheme by which it will reimburse employers for compensation paid in case of permanent disability, injuries or death. — C. H. Paull.

Direct Settlements Under New York Compensation Law. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 253–255. — Nearly all compensation laws in the United States permit direct settlements between the employer and the employee in industrial accident cases. The original Compensation Act of New York required the Compensation Commission to adjudicate all cases, but an amendment in 1915 permitted direct settlements.

A report from a commission of investigation states that conditions resulting from direct settlement are shocking; that in 50 per cent. of the cases thus settled the claimant is underpaid; and that the records are so kept that it is impossible to determine the extent of disability, the character of the injury, or the amount of compensation paid. As a result the commission recommends an amendment to the compensation law, abolishing direct settlements and requiring the commission to pass upon all cases. — L. A. Shaw.

Workmen's Compensation Legislation in Missouri, North Dakota, and Tennessee. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 255–259. — A brief statement of the salient points in the recently enacted compensation laws in these states, with a particular reference to the weaknesses of the new law in Tennessee. — C. H. Paull.

Medical Administration of Health Insurance. *Woods Hutchinson.* U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 285–292. — Dr. Hutchinson points out several essentials of health insurance as he sees them in connection with the work of the Social Insurance Commission of California. He emphasizes the importance of a capitation system of payment for medical service as the keynote of the medical administration of health insurance in that it leaves the individual free to seek medical service at any time at no added cost, and in that it distributes the cost of medical service evenly over good and bad years and gives the fortunate and unfortunate equal protection. Regarding co-operation from physicians he points out that experience in England has shown the willingness of doctors to co-operate in such a scheme. The article goes into the organization of state medical service as regards supervision, provision of specialists and hospital facilities. — C. H. Paull.

Report on Health Insurance and Old-Age Pensions. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 270–284. — A reprint of the recommendations of the 1919 report of the California Social Insurance Commission, including a brief statement of the history of the movement in California. Both the majority and minority reports are included. Among the important features of the report of the majority are the favoring of a compulsory scheme with certain stated limitations; the payment of premiums based upon wages rather than a flat rate; the payment of an amount for disability based upon wages; the carrying of insurance by state or other agencies; the free choice of physician by the insured; a thorough plan for state and local administration of the act.

Among the points made in the minority report are the necessity for a flat rate which would protect equally all citizens; the desirability of having a simple flat rate of payment for disability; the danger of establishing class distinction by making insurance compulsory only among certain groups; the importance of exempting those with conscientious scruples; the desirability of having state insurance clearly distinguished from similar insurance by other agencies. — C. H. Paull.

The Economic and Political Bases of State Insurance Against Sickness. *L. Verney.* Policlinico, June 29, 1919, 26, No. 26, 817–825. — Several bills for sickness insurance of the working classes are at present before the Italian legislature. It is expected that the insurance will take in about ten or twelve millions of persons. The bills are generally fashioned after the British law. The insured are expected to contribute to the insurance fund according to their means, and in case of sickness the insured are permitted to select the physician they desire. The author is very much in favor of insurance and thinks that the position of the medical practitioner will thereby be very much improved. — A. Allemann.

REHABILITATION OF DISABLED EMPLOYEES

Disabled Soldiers and Sailors: Pensions and Training. *E. T. Devine* assisted by *L. Brandt.* Carnegie Endowment for International Peace. Preliminary Economic Studies of the War, No. 12, 1919, pp. 471. — *Part I* treats of the disabilities caused by the world war. *Part II* is an historical survey of the attitude toward and the disposition made of disabled soldiers and sailors in the past. *Part III* traces the current development of the restoration and re-employment of disabled men in Great Britain, Canada, France, Germany, Austria and United States. *Part IV* discusses the new program including physical restoration, financial indemnities, and economic re-establishment. — L. A. Shaw.

Plan to Prevent Discrimination Against Employment of Military Cripples in Great Britain. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 70–73. — This is a brief summary of the findings of a committee appointed by the Secretary of the Home Office. The committee, after investigation, could find no satisfactory statistical basis for a conclusion that the disabled man was a greater industrial risk than the able-bodied worker. On the other hand, there was a consensus of opinion that, particularly in the more hazardous occupations, he would be less satisfactory.

Because of this fact and because of keen competition anticipated with the resumption of normal business, the committee felt that the employer should be encouraged in hiring disabled men by removing the possibility of unusual liability. Three possible schemes were suggested, and the third of these recommended as a basis for action.

1. The bearing of the extra insurance liability by the man himself.
2. The bearing of the added liability by the trade as a whole.
3. Assumption of the added liability by the state.

In the plan finally recommended the insurance companies would be required to insure the disabled worker at the ordinary rate, and the state would make itself responsible for any excess charges in compensation arising from the state of previous disability of the worker. — C. H. Paull.

Report on Industrial Consequences of Permanent Disabilities in California. U. S. Bur. Labor Statis., Month. Labor Rev., June, 1919, 8, No. 6, 247–253. — A comprehensive investigation of the economic handicap suffered by permanently disabled industrial workers, made by the California Industrial Accident Commission.

From January 1, 1914, to June 30, 1918, there were 7500 industrial injuries in the state of California. Of these 15 per cent. were permanent injuries serious enough to constitute a handicap. Of the permanently injured, about 30 per cent. were unemployed. According to the report, industrial re-education is the solution. Costs are given to cover a six months' educational period. The commission concludes that economically, not to mention other considerations, the money so spent would constitute a splendid investment. — L. A. Shaw.

Opportunities for Handicapped Men in the Rubber Industry. *B. J. Morris* and *C. H. Paull.* Publications of the Red Cross Institute for Crippled and Disabled Men. June 14, 1919, Series 11, No. 9, pp. 125. — An article giving in detail the processes involved in the rubber industry and the type of disability which is best suited to each process. — L. A. Shaw.

Abstract of Proposed Plan for the Psychic Rehabilitation of Psychopathic and Neuropsychopathic Soldiers. *E. W. Lazell.* The Psychoanalytic Review, July, 1919, 6, No. 3, 350–352. — There is need of prompt and thorough attention to the problem of the mental restoration of the great number of soldiers who have been mentally damaged by the experiences of the war, or in whom the war has brought to the front inherent mental deficiencies. Shell-shock is to be interpreted in terms of a psychic condition requiring analysis and re-education. Workers must be trained and organized to deal with these cases, and for this purpose courses should be given in the state universities. Rehabilitation consists mainly of character-building through cultural work combined with gymnastic and vocational work. — G. E. Partridge.

ABSTRACT OF THE LITERATURE

OF

INDUSTRIAL HYGIENE

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CONTENTS

	PAGE
General	119
Systemic Occupational Diseases: Occurrence, Treatment and Prevention	123
Poisonous Hazards and Their Effects: Gases, Chemicals, etc.	124
Dust Hazards and Their Effects	127
Occupational Infectious Diseases: Occurrence, Treatment and Prevention	127
Occupational Affections of the Skin and Special Senses	129
Occurrence and Prevention of Industrial Accidents	129
Industrial Surgery	132
Fatigue and Occupational Neuroses	132
Nutrition and Metabolism	133
Women and Children in Industry	133
Industrial Sanitation: Illumination, Ventilation, Heating, Water Supply, Sewage Disposal	134
Medical Dispensaries and Hospitals in Industrial Plants	136
Industrial Nursing	136
Industrial, Personal and Community Hygiene: Housing, etc.	136
Industrial Service and Mutual Benefit Associations	137
Industrial Health Legislation and Court Decisions: Malingering	138
Workmen's Compensation and Insurance	138
Rehabilitation of Disabled Employees	139
Industrial Mortality and Morbidity Statistics	139

GENERAL

OCCUPATION HAZARDS AND DIAGNOSTIC SIGNS. A GUIDE FOR MEDICAL EXAMINERS REGARDING IMPAIRMENTS TO BE LOOKED FOR IN HAZARDOUS OCCUPATIONS. Metropolitan Life Insurance Company, 1918. — This tiny booklet, issued by the Metropolitan Life Insurance Company for the instruction of its medical examiners, is, so one surmises, prepared by Dr. Louis I. Dublin, who is to be congratulated on his achievement. The material is stated to be derived in part from Bulletin 100 of the U. S. Bureau of Labor Statistics, the *List of Industrial Poisons*, compiled by Sommerfeld and Fischer, but it is much more concise, it is modified to cover more nearly American conditions in industry, and its value is enhanced by a cross-reference index which enables the reader to run down a suspected occupation and discover the hazards in it. The fifteen pages make up a slim little pamphlet which can be carried in a pocket book, and the information crammed into it will be of service not only to insurance examiners but to any physician whose practice brings him in contact with men and women employed in the many processes of our complicated modern industry.

Dr. Dublin does not attempt to present a complete scheme of occupational hazards, he contents himself with listing them simply under four heads; dusts, heat, humidity and poisons, and under the last he gives twenty-four poisonous substances. For each of these there is a list of the various occupations in which the poison in question is encountered and the symptoms set up by it. Following this is an alphabetical list of hazardous occupations with references back to the first list. Thus a physician can consult the first list for the symptoms of anilin poisoning and for the occupations in which it is used, or, if he suspects occupational poisoning in a rubber compounder, he can look up rubber compounding and find all the toxic substances used, among which will be anilin.

Doubtless Dr. Dublin would not claim either comprehensiveness or complete accuracy for this little book and the fact that there are occasional lapses to be found in it does not mean that his work has not been, on the whole, admirably done. A few instances may be mentioned which should be corrected in a later edition. Thus under "Dust," we find cyanamid manufacture mentioned, but not

felt-hat making nor the furriers' trade. Now the first is a rare occupation, the last two are common and employ many people. Moreover cyanamid dust is not inert, it has decidedly toxic qualities and should rightly come under the head of poisons. Perhaps it is unnecessary to include laundry work under the heading "Humidity," it is so notorious, but it is a serious mistake to choose composing as the occupation in the printers' trade which involves exposure to lead and not mention stereotyping and electrotyping, in both of which the exposure is greater. In like manner, lithograph artists are put under lead workers, but litho-transfer workers are omitted, although they suffer far more from lead poisoning. Under the industries in which there is danger of H_2S poisoning should come the manufacture of sulphur dyes, especially khaki and browns. Phenol manufacture carries with it the danger not only of phenol poisoning, but of benzol. Only recently there were two deaths from benzol in this industry.

Naturally it will be necessary to revise such a guide from time to time and bring it up to date, for industry changes so quickly. Even now the list of poisons in the rubber industry is incomplete. New volatile poisons are coming into use there that expose not only compounders and mixers but even steam vulcanizers. This is an enormous task for one man but Dr. Dublin's first attempt is so nearly successful that we must hope he will continue his work in this field. — Alice Hamilton.

INDUSTRIAL HAZARDS. *Royal Meeker.* U. S. Bur. Labor Statis., Month. Labor Rev., Sept., 1919, 9, No. 3, 1–8. — In this paper Dr. Meeker takes a stand which is novel in the United States though held for many years by experts in Europe, namely that the usual interpretation of an industrial hazard is too narrow, that the term should cover "anything occurring within an industry which impairs the earning power of a worker," and that the effects of industrial poisoning and disease are even more disastrous and far-reaching than those of accidents. There is no clear line of demarcation between industrial accident and disease. "The loss of the use of a hand affects the health of the worker just as vitally whether his disability is caused by an exposed gear or by lead poisoning. The economic effects of disabilities are the same, no matter how produced." Consequently industrial illness, so far as industry can be held responsible for it, should come under the same compensation laws as industrial accidents. It is the difficulty in proving responsibility that presents the great obstacle to proper compensation for industrial disease. Dr. Meeker believes that this responsibility is far greater than is generally admitted, that industry is a contributing factor in ill health even more than in accidental injuries. That it is difficult to rule out the influence of home conditions, bad housing, infected water supply, and so on, he admits, but industry cannot disclaim its share because other factors have a share also.

By far the most important of all industrial diseases is fatigue. Here too Dr. Meeker takes in account the usual defense of the employer that his workers are exhausted by unwholesome amusements and not by their employment, but he thinks that source of fatigue negligible in importance compared to the fatigue of monotonous work under bad conditions, and he insists also that this very sort of work brings on a craving for excitement and even dissipation. Accumulated fatigue is probably the cause of a very great deal of sickness not thus far attributed to industry and for this he believes that bad construction and bad management of industrial establishments is chiefly responsible, and that intelligent management could eliminate these evils with an enormous resulting benefit to production and to producers. Dr. Meeker risks the wrath of the employing class by asserting that not less than half the illness in the country, probably more than half, originates in and grows directly out of employment.

In discussing accidents, also, the responsibility of the employer is emphasized. Far too much stress has been laid on the supposed carelessness of the employee and on the necessity of educating him in "Safety First." The studies into causes and results of accidents made by the Bureau of Labor Statistics tend to show that the severer class of accidents are due more to defects in lay-out and construction of plants than to carelessness of the employed. Therefore, while educational work among the force is valuable, the first thing is to do away with these dangers over which the worker's control is very slight.

As this view of the distribution of responsibility is unusual, it is worth quoting Dr. Meeker's conclusion: "Education in industrial hygiene is a matter mostly for employers. Every intelligent employer has competent machinists to look after the injuries to his machines. If a valuable, universal screw machine meets with a mishap, it is given a vacation, with pay, until the machine surgeon repairs the injury. . . . If an engine lathe contracts industrial fatigue, it is given a rest and thorough overhauling. The employer must be assisted to comprehend that his workmen deserve at least as humane treatment as his machines and mules."

There are also in this same paper two interesting sections on unemployment and unemployment insurance. — Alice Hamilton.

THE RELATION OF THE RAILROADS TO THE PUBLIC HEALTH. Public Health, Mich. Dept. Health, Oct., 1919, 6, No. 10, 452–456. Abstracted in JOURNAL OF INDUSTRIAL HYGIENE, October, 1919, Vol. 1, No. 6, p. 85.

WHAT THE FEDERAL GOVERNMENT IS DOING FOR INDUSTRIAL HYGIENE. *B. J. Newman.* National Conference of Social Work, Pamphlet 194, pp. 4. — During the war, control over all health problems affecting industrial workers was turned over to the United States Public Health Service. At the termination of the war, this department co-operated with the Working Conditions Service. Hazards inherent in old machinery, temperature extremes,

fatigue, substances used in processing, industrial poisonings, ventilation, surgical and medical supervision, first aid and hospital care, etc., were some of the problems investigated with a view to promoting maximum health and efficiency among the workers. The corps continued to do its work after the war at the request of the plants. Furthermore, the service was extended into the community itself. Thus, several towns within industrial zones have been surveyed that the hazards arising from improper sewage disposal, from the use of a non-potable water, and the occupancy of insanitary dwellings might be noted and plans made for their correction. Problems of responsibility for accidents or sickness, and the efficiency of the medical and surgical departments of industries, first under government control and later under private management, have been handled by this service. — L. A. Shaw.

The Road to the Eight-Hour Day. *Stephan Bauer.* (Translated by Alfred Maylander.) U. S. Bur. Labor Statis., Month. Labor Rev., Aug., 1919, 9, No. 2, 41–66. — The writer discusses this subject under three headings: (1) the international origins; (2) the age of international experiments with the eight-hour day; (3) social revolutions and international solutions.

"The cradle of the eight-hour day is to be found in five countries; in Germany, England, Australia, America, and France." The relation of the eight-hour day in these countries to production and the employment of children and women is discussed in connection with various occupations involved in the movement. Looking upon the eight-hour day in the light of an experiment the writer sees in the future a gradual transition to the eight-hour day. This transition will not reduce production because of improved mechanical devices and innovations in technique and organization. The introduction of the eight-hour day universally will result in the betterment of conditions for juveniles and women in industry. — C. H. Paull.

The Eight-Hour Day in a Small Training School. *F. L. Wetmore* and *L. Goeppinger.* Am. Jour. Nursing, August, 1919, 19, No. 11, 873–877. — The eight-hour law should be adopted by the training schools for nurses. The day should be divided in such a way that the nurse is apportioned eight hours of practical work, eight hours of recreation, and eight hours of rest. Not until some such arrangement has been adopted will high-grade women look with favor upon nursing as a profession. — L. A. Shaw.

Labor Problems and Labor Legislation. *John B. Andrews.* Publication of the American Association for Labor Legislation, 1919, pp. 136. — In this very interesting and comprehensive little book the author presents in a simple and very lucid manner a discussion of the legislative aspects of the social and hygienic safeguards of employment. The healthful and efficient employment of labor is not an individual problem but rather one of deep social importance, and as such is to be met with that weapon of society that strives for the greatest good for all, namely, the law.

The book is divided into eight chapters dealing with employment, wages, hours, safety, health, self-government in industry, social insurance, and enforcement by laws. Each of these topics is discussed briefly, and the effect, tendencies, and deficiencies of legislation are clearly brought out. — L. Greenburg.

New York State Labor Law with Amendments, Additions and Annotations to August 1, 1919. Issued under the direction of the Industrial Commission. — This is a pamphlet of 191 pages containing the general Labor Law of New York state, the penal provisions relating thereto, and references to all amending acts since 1909. A full index appears at the end of the pamphlet. — K. R. Drinker.

Thirty-Sixth Annual Report of the State Board of Health of Missouri. Bureau of Vital Statistics, 1917–18. — A report of 393 pages stating the activities of the Missouri State Board of Health during 1918, with extensive statistical tables. Services rendered fall under four main divisions: (1) Bureau of Medical Licensure; (2) Contagious Diseases; (3) Laboratory; (4) Bureau of Vital Statistics. — L. A. Shaw.

Interallied Congress for Social Hygiene, Section of Industrial Hygiene. Presse méd., June 19, 1919, 34, 462. — The Section resolves:

"1. That the Minister of Industrial Reconstruction, in co-operation with the Minister of Labor, shall indicate to manufacturers, who may be interested, the requirements of the labor law, either textually or directly.

"2. That manufacturers be notified that they may obtain useful advice from the safety societies in regard to the organization of hygienic and safety measures in factories." — T. J. Putnam.

The United States Employment Service. *N. A. Smyth.* The National Civic Federation Review, January 25, 1919, 4, No. 8, 19–20. — The paper describes the work of the Government Employment Service during the war and leads to the argument that some form of centralized employment service should become permanent. What is needed is not a completely federal service, but a federated system in which there shall be an intercommunicating chain of employment services, the federal government furnishing the intercommunication and keeping up the standards. This, the writer thinks, is a national necessity. — G. E. Partridge.

Nation-State Employment Service. Am. Labor Legis. Rev., June, 1919, 9, No. 2, 195–198. — A brief statement of the needs for a permanent employment service which shall involve co-operation between state and federal agencies in providing adequate facilities for the employment and distribution of labor. This article contains an outline of a bill

adopted at the conference on employment held in April at Washington. The bill provides the organization and procedure for full and permanent co-operation of public agencies in solving employment problems. It is upon this outline that the Kenyon-Nolan bills are based. — C. H. Paull.

Immigration, Past and Future. *W. G. Smith.* Canad. Jour. Ment. Hyg., April, 1919, 1, No. 1, 47–57. — The paper begins with a review of the history of immigration into Canada, showing the great need of government control, and the satisfactory results of such control during the last few years. Between 1900 and 1908, the influx was great, but among the immigrants were so many misfits and undesirables that in 1908 an Order-in-Council was passed to prevent Canada from being used any more as a dumping ground. — S. Cobb.

Immigration and the Canadian National Committee for Mental Hygiene. *L. D. Pagé.* Canad. Jour. Ment. Hyg., April, 1919, 1, No. 1, 58–61. — The great number of foreign-born, mental defectives and insane found in Canadian institutions shows the importance of psychiatric supervision of immigration, especially if the population of Canada is to be doubled in the next ten years, as has been predicted. Interest in this problem has been aroused by the Committee for Mental Hygiene, particularly in western Canada. The committee recommends that mental examinations be carried out at the ports of embarkation and on board the ships rather than at the ports of arrival. — S. Cobb.

Survey of the Province of Manitoba. Public Welfare Commission of Manitoba. Canad. Jour. Ment. Hyg., April, 1919, 1, No. 1, 77–82. — A survey was made by the Public Welfare Commission of Manitoba and the following principal recommendations were made: That insane hospitals be put on a similar basis with general hospitals, and that special institutions be set aside for defective patients, as they are a totally different problem from the insane. This is important since the birth rate among defectives is fearfully high and the influence of heredity is strong. A surprisingly large proportion of the defectives have come from the immigrant class. The care of the defectives is not difficult because they can be practically self-supporting; although they are incapable of planning work, they often can be trained to a high degree of manual dexterity and can be used in various industries. — S. Cobb.

Industrial Training, a Way Out. *H. E. Miles.* The National Civic Federation Review, April 10, 1919, 4, No. 12, 2–3, 19. — This is a somewhat popular statement of the work of the Committee on Industrial Training, appointed by the Committee on Labor of the Council of National Defense. The work of the committee, the writer maintains, illustrates the fact that there are many fields of "extreme and common concern to wage earners and their employers in which they should aggressively co-operate."

Several results were conspicuous. It was shown that by intensive training in special operations a high degree of skill could be produced very rapidly: and the work of the "vestibule schools," or training departments in war factories, showed that the skill, happiness, loyalty and accomplishment of workers may be about what the employers choose to make them. It is now known that by a little training of the right kind almost any employer can obtain from 20 to 40 per cent. more from his present workers, to the increased satisfaction also of the workers, since men dislike to do what they do poorly and enjoy doing what they do well. Some charts are shown, indicating that, in some processes, output of a man may be doubled by a few weeks of special education. — G. E. Partridge.

Sight Saving Schools. *N. B. Harman.* School Hygiene, March, 1919, 10, No. 1, 1–14. — This paper is of interest mainly from the educational point of view, but the industrial future of myopic children is taken into account. Special schools for the short-sighted should be closely associated with regular schools, in order not to leave the stamp of abnormality upon the myopic class. Special instruction is outlined, but the scheme of work, the writer says, is nothing more than the application of common sense. Outdoor work involving standing and moving is most suitable for this class of children. For boys, the first selection includes nursery gardening, poultry farming, messenger service, work as assurance agents, travelers, canvassers, rent collectors, hawkers, street traders, waiters and hair-dressers, shopwork under good conditions, and piano-tuning. For girls, work as florists, waitresses, under-nursemaids, helpers in mothers' centers, and light warehouse work are included. At present there are twenty-one schools for myopes in London. Ten years or so ago, opthalmic surgeons were accustomed to forbid school to their highly myopic patients. Now they refer them for admission to the myopic class. — G. E. Partridge.

Some Essentials in Teacher Training as they Apply to Trades and Industries. *J. McKinney.* Manual Training Magazine, October, 1919, 21, No. 2, 41–45. — Because both practical experience in a trade and special training in teaching are required to make a good industrial teacher, and because the right combination is rare, there is much ineffective industrial teaching at the present time. The course of study for the trade teacher has as its central problem the changing of the point of view of a man skilled in productive activity from that of a producer to that of an instructor, and usually the mechanic does not know that this change is profound. The college lecture method is not enough. Observation and practice work in actual teaching are necessary parts of the training. Finally, the trade teacher must be made to see his trade in the largest possible way, so that he can make it a tool of a thorough educative process for the learner, and introduce him

thereby to a life with an outlook. Teaching ability of this sort needs to be cultivated. — G. E. Partridge.

The Teacher as a Social Worker. *J. T. Williams.* Education, March, 1919, 39, No. 7, 424–430. — We need a new conception of the function of the teacher that will include a recognition of the necessity, in any scheme of education, for an ideal of a healthy body and a wholesome environment. The teacher of the future must be a social worker as well as an imparter of knowledge and must have far better training in hygiene than he has now. It is to the unfavorable home that the work which has its center in the school must bring definite improvement and education. Especially in the rural community is there demanded a more social principle in education. — G. E. Partridge.

After the Lean Years. Impressions of Food Conditions in Germany when Peace was Signed. *Jane Addams* and *Alice Hamilton.* Survey, Sept. 6, 1919, 42, No. 23, 793–797. — An account of observations made in Germany by the writers. They point out that, although hostilities are ended, Germany has been so stripped of certain food resources that her need will last for a long time. Conditions among children and young adults demanded much of the writers' attention. It was found that tuberculosis had developed alarmingly, both as to number of cases and severity of types. Rickets was "enormously prevalent" among children. Intestinal diseases of all kinds were greatly increased. Due to lack of soap, proper conditions of cleanliness both among the well and the sick could not be maintained. A general condition of undernourishment and malnourishment was found to prevail. Although the harvests of the present year will furnish an immediate supply of vegetables and grain, there will still be a dangerous lack of fats and albuminous foods unless much outside assistance is rendered. — C. H. Paull.

The Reorganization of the General Abattoir of La Villette. *M. H. Martel.* Rev. d'hyg., March, 1919, 41, No. 3, 224–235. — The Board of Health of the city of Paris has decided that the new abattoir to be erected in La Villette must be conducted throughout after the plan of an industrial establishment. The author, who is a member of the Board of Health, states that the so-called modern abattoirs of the cities of central Europe do not come up to the standards of modern hygiene. The industrial abattoir with four or five stories, as it is found in the United States, alone can fill the requirements of modern hygiene and modern economics. In the old abattoir of La Villette, cleanliness was lacking and the workmen maltreated the animals while driving them to the place of killing. In America the rules require that the animals be treated gently as brutality has a harmful effect on the meat products. The Board of Health proposes to introduce in the new abattoir in La Villette the American methods of slaughtering, sanitation and inspection. It may be conducted under the management of the city, a syndicate or a private individual. — A. Allemann.

SYSTEMIC OCCUPATIONAL DISEASES: OCCURRENCE, TREATMENT, AND PREVENTION

Cancer Poster of the National Safety Council. — A new cancer poster for use in industrial establishments has just been issued by the National Safety Council. Copies of this poster may be purchased at cost from the National Safety Council, 168 North Michigan Ave., Chicago. — K. R. Drinker.

CENTRAL NERVOUS SYSTEM

Bulbar Syndrome of the Coal Miners. *Benoit.* Scalpel, May 17, 1919, 72, No. 8, 141–154. — The author presents two cases with subjective symptoms of miners' nystagmus but almost no objective nystagmus, except when this is induced by having the miner sitting on a revolving chair.

A number of miners, free of any subjective symptoms, were then compared with workmen who never had been in a mine: nystagmus was induced with the revolving chair; it was always much more pronounced in the case of the miners than in the case of the other workmen. So B. believes that the exaggerated atmospheric pressure under which the miners are working causes a labyrinthic hyperesthesia; this may then increase till the characteristic miners' nystagmus develops. The origin of this disease is in the labyrinth, and not in the eye. The nystagmus is only a symptom of the labyrinthic trouble. — René Sand.

CIRCULATORY SYSTEM

Report upon Soldiers Returned as Cases of "Disordered Action of the Heart" (D. A. H.) or "Valvular Disease of the Heart" (V. D. H.). National Health Insurance, Medical Research Committee, London, H. M. Stationery Office, 1918, 79 pp. — The larger part of this pamphlet is a detailed report upon the effort syndrome, or soldier's heart, as seen in the British army. The origin, diagnosis, course, and treatment of this important condition are fully dealt with. In addition, there is given a valuable outline of the procedure for the sorting of military patients suffering from cardiac disorders, which should be of particular interest to physicians engaged in examining large bodies of men for fitness to do heavy work. — T. J. Putnam.

Studies on Epinephrin. 1. Effects of the Injection of Epinephrin in Soldiers with "Irrit-

ABLE HEART." *Joseph T. Wearn* and *Cyrus C. Sturgis*. Arch. Int. Med., Sept. 15, 1919, 24, No. 3. Pp. 247–268.

2. THE EFFECTS OF EPINEPHRIN ON THE BASAL METABOLISM IN SOLDIERS WITH "IRRITABLE HEART," IN HYPERTHYROIDISM AND IN NORMAL MEN. *Edna H. Tompkins, Cyrus C. Sturgis* and *Joseph T. Wearn*. Pp. 269–283.

3. EFFECT OF EPINEPHRIN ON THE ELECTROCARDIOGRAM OF PATIENTS WITH "IRRITABLE HEART." *Harry D. Clough*. Pp. 284–294.

THE POSSIBILITIES OF PHYSICAL DEVELOPMENT IN CASES OF EFFORT SYNDROME BY MEANS OF GRADED EXERCISES. *Bertrand Smith*. Pp. 321–331.

These four articles are studies of the different aspects of the problem of "Irritable Heart." — W. Herman.

RESPIRATORY SYSTEM

OBSERVATIONS ON THE VITAL CAPACITY OF THE LUNGS IN CASES OF "IRRITABLE HEART." *S. A. Levine* and *F. N. Wilson*. Heart, July 22, 1919, 7, No. 2, 53–61. — The authors summarize the results of their experiments as follows: "The average vital capacity is slightly but definitely reduced in the severe cases of 'disordered action of the heart.'" The reduction is not sufficiently constant to be of use in classifying these patients, nor is it sufficiently great to account for the breathlessness which they show so rapidly on exertion. The slight reduction in the vital capacity is due partly, if not altogether, to the discomfort which the severe cases experience in deep breathing, and to fatigue.

"Exercise considerably reduces the vital capacity in severe 'D. A. H.' But since exercise, sufficiently strenuous to produce breathlessness in normal individuals, does not materially reduce vital capacity in these, breathlessness cannot be regarded as the cause of the reduced vital capacity in severe 'D. A. H.' cases." — C. C. Lund.

THE LUNGS AND BREATHING IN WIND-INSTRUMENT PLAYERS. A contribution to the Question of the Development of Emphysema. *N. Jagić* and *J. Lipiner*. Wien. klin. Woch., July 3, 1919, 32, No. 27, 714 (*Concluded*). — A study of the mechanism of breathing in players of different classes of wind instruments. Expert performers, like trained singers, demonstrated excellent control of volume and tone by means of the abdominal muscles and diaphragm. There was found no convincing evidence that playing of such instruments leads to the development of emphysema. — Barnett Cohen.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

METHOD OF TESTING GAS MASKS AND ABSORBENTS. *A. C. Fieldner, G. G. Oberfell, M. C. Teague* and *J. N. Lawrence*. Jour. Indust. and Engin. Chem., June 19, 1919, 11, No. 6, 519–540. — The authors discuss:

1. Absorbent tests which are used in the development and control of absorbent production.

2. Machine canister tests, used in the development of canisters and in controlling the uniformity of filling the canisters at the factory.

3. Actual man tests, in which men wear the masks in gas chambers, to determine the life of the canister, maximum protection, leakage, comfort, and fit of the facepiece. — Worth Hale.

PROTECTION AFFORDED BY ARMY GAS MASKS AGAINST VARIOUS INDUSTRIAL GASES. *A. C. Fieldner, M. C. Teague* and *J. H. Yoe*. Jour. Indust. and Engin. Chem., July, 1919, 11, No. 7, 622–623. — The authors state that the army mask should not be used in atmospheres containing less than 12 per cent. oxygen nor in atmospheres containing a large per cent. of toxic gases. The standard filling of charcoal and soda-lime is efficient for a general group of toxic gases but specific gases may be excluded better by either soda-lime or charcoal, depending on the power of absorption of these elements. Carbon monoxide is not removed. In the absence of this gas, the mask containing filter pads protects against smoke. — Worth Hale.

A NEW ABSORBENT FOR AMMONIA RESPIRATORS. *G. St. J. Perrott, Max Yablick* and *A. C. Fieldner*. Jour. Indust. and Engin. Chem., November 1, 1919, 11, No. 11, 1013–1016. — Protection for workmen in industries where ammonia is used is needed because of the escaping gas, frequently up to 2 per cent. Pumice stone impregnated with copper sulphate is shown to have a large capacity for absorbing ammonia. A canister containing 45 cu. in. of this material will protect a man at rest for at least five hours against 2 per cent. ammonia and for two and one-half hours against 5 per cent. ammonia. Tests under exertion show that protection is afforded equally well. Several other salts and boric and silicic acids are also good absorbents. The advantages of these absorbents are large capacity, negligible heat absorption and cheapness. — Worth Hale.

EXPERIENCES WITH TOXICOLOGICAL SUBSTANCES EMPLOYED BY SOLDIERS TO PRODUCE SELF-INFLICTED INJURIES. *P. Pick* and *R. Wasicky*. Original in M. Kl., 1919, p. 6. Following is a translation of the abstract in Therap. Monatsh., April, 1919, 33, No. 4, 158–159. — The writer examined many substances used by soldiers to produce self-inflicted injuries. To cause ulceration and inflammation of the skin, plants, drugs, insects, etc., were commonly resorted to, as for instance, hellebore, anemone, tobacco, and members of the liliaceae and

iridaceae, and very frequently turpentine. Cantharides plasters were also employed. Among the chemical irritants, acids, alkalies, metallic salts, soaps and petroleum may be mentioned. The same agents were used to simulate diseases of the genitalia, eyes or ears. To induce internal injuries other agents were employed, particularly picric acid and lactophenin, to produce jaundice; various drastics, and sometimes saffron, for their injurious effects upon the gastro-intestinal tract; digitalis, nicotin and purin derivatives for their heart action, and occasionally potassium chromate or turpentine for their irritating effects on the kidneys. — G. B. Wislocki.

On the Occurrence of Toxic Necrosis of the Jaws following Antiluetic Treatment. *W. Schulze*. Original in Mitt. Grenzgeb., 1918, Vol. 30, p. 366. Following is a translation of the abstract in Therap. Monatsh., May, 1919, 33, No. 5, 199. — Report of five cases of necrosis of the jaw, four of which had lues. In all the cases, sequestra were formed (in one, of nearly the entire lower jaw) following severe, purulent inflammation of the buccal and alveolar mucous membrane. Healing occurred eventually in spite of their severity. In one case, the condition was directly attributable to the injection of arsenious acid by a dentist into the tissue surrounding an alveolus. In the remaining three cases, the writer believes that mercury was largely responsible for the lesions. In one of these cases he believes that tertiary lues was partly responsible. Of the preparations of mercury, he believes that one called mercinol is particularly apt to be injurious because it is rather insoluble and causes marked irritation of the buccal mucous membrane. The writer warns against the use of too large doses of insoluble mercury salts. — G. B. Wislocki.

Identification and Quantitative Determination of Small Amounts of Hydrocyanic Acid. *P. Lavialle* and *L. Varenne*. Apoth. Ztg., 1919, p. 116, from Journ. d. Pharm. et de Chir. Following is a translation of the abstract in Therap. Monatsh., June, 1919, 33, No. 6, 238. — Cyanides when treated with calcium polysulphide are converted quantitatively into rhodanides, in case there are no ammonium compounds present. The determinations reported here are based on this fact. The rhodanides are titrated with silver nitrate. — G. B. Wislocki.

Experiments on Detoxifying Inhaled Hydrocyanic Acid by Sodium Thiosulphate. *E. Teichmann* and *W. Nagel*. Biochem. Zschr., 1919, 93, p. 312. Following is a translation of the abstract in Therap. Monatsh., July, 1919, 33, No. 7, 278. — These investigators poisoned mice in glass cages with fumes of hydrocyanic acid of 0.1 per cent. concentration, the animals dying in $2\frac{1}{2}$–$6\frac{1}{2}$ minutes. They then attempted to save the animals by the intraperitoneal injection of 3 mg. of sodium thiosulphate per gram of body weight, 3–5 minutes after gassing. Of fourteen untreated mice, nine died; of twelve treated ones, five died. The injection of sodium thiosulphate is consequently considered far less effective in saving mice that have been gassed than in saving those that have been injected with hydrocyanic acid, the favorable treatment of which with thiosulphate was reported by Lang. The treatment with thiosulphate was found more effective in animals which had been gassed with sublethal concentrations of hydrocyanic acid. Treatment with thiosulphate previous to gassing was very effective and the writers consider this of practical importance and recommend that persons working with hydrocyanic acid be previously treated with thiosulphate. — G. B. Wislocki.

Chrome Poisoning: Interesting Cases from Toxicological Practice. *W. Lührig*. Original in Mitteilung a. d. Chem. Unters.-Amt d. Stadt Breslau, Pharm. Zentr. Halle, 1919, p. 165. Following is a translation of the abstract in Therap. Monatsh., June, 1919, 33, No. 6, 239. — The writer reports cases of poisoning by chromates, caused by mistaking potassium chromate for sulphur in the preparation of a sulphur ointment to be used in the treatment of scabies. The patients were consequently treated with a vaseline salve containing 37 per cent. potassium chromate. Several of the cases had a fatal outcome.

The writer gives several methods for the quantitative identification of traces of chrome in the organs obtained at autopsy. The tissues of four persons were examined. One-third to one-fourth of the entire amount of poison was recovered from the brain, and of the other organs it was found in large amounts in the liver and kidneys. — G. B. Wislocki.

Poisoning by Dinitrobenzol. *O. Steiner*. Original in Schweiz. KorrBl., 1919, p. 1139. Following is a translation of the abstract in Therap. Monatsh., July, 1919, 33, No. 7, 279. — The cases reported are in munitions workers. The mild cases are characterized by bluish discoloration of the skin, general malaise and headache; the severe cases, by loss of consciousness, dyspnea, fibrillary muscle twitching and pronounced odor of HCN. Therapy: inhalation of oxygen, baths and stimulants. No deaths occurred. — G. B. Wislocki.

Poisoning by Oil of Chenopodium. *P. Ryhiner*. Original in Schweiz. KorrBl., 1919, p. 161 and 360. Following is a translation of the abstract in Therap. Monatsh., July, 1919, 33, No. 7, 279. — The writer presents a number of case histories which show that oleum chenopodii is an excellent remedy in ascaris infections but that it cannot be used in indiscriminate doses. In addition to Ryhiner's cases there are fifteen others of poisoning by oil of chenopodium, ten of which terminated fatally. In severe cases, hearing may remain permanently impaired but the other cranial nerves escape injury. The dose for adults should be 16 drops three times daily; for children, 8 drops three times every other day. Ryhiner observed poisoning even with this dose, so he advises giving children 1 drop hourly until the

total is the same as their age. Two hours after the last dose he gives a laxative. — G. B. Wislocki.

HEART FINDINGS IN ILLUMINATING GAS POISONING. *Herman Zondek.* Deutsch. med. Wchnschr., June 19, 1919, 45, No. 25, 678–680. — "In illuminating gas poisoning a constant symptom-complex is seen in the heart and circulatory system. It shows itself:

"1. In a pronounced fall in blood-pressure, lasting about a week.

"2. In early tachycardia, which gives place on the third or fourth day to a slowing of the pulse. Irregularity of the beat, in the sense of extrasystoles or marked sinus arrythmia, will be noted.

"3. In an acute dilatation of the heart, which may reach a very serious degree. In strong, functionally powerful hearts, this confines itself to a decrease of tone; in functionally less efficient hearts, a myogenous dilatation follows the lessened force of contraction and loss of elastic recoil. This usually disappears on the third or fourth day following the poisoning, but in some cases occurs first on the third day, as the so-called delayed dilatation. Thus, the degree of enlargement of the heart is an index of its efficiency and resistance." — T. J. Putnam.

CONTRIBUTION TO THE STUDY OF LEAD INTOXICATION OCCURRING AMONG PAINTERS. *M. Herman.* Bull. Acad. Méd. Belg., July, 1914, 4th series, 28, No. 7, 484–489, and Scalpel, August 10, 1919, 72, No. 14, 320–325. — Dr. Herman has started experiments on the vexed question of vapors or particles emitted by lead paint.

1. A piece of filter-paper is hung above a fresh mixture of white lead and oil; the whole is covered with a bell-glass. After twenty-four hours, the filter-paper gives with H_2S the reaction of lead. But if the mixture of white of lead and oil is left to stand two days before the filter is hung above it, no lead is found in the filter-paper.

Conclusion: Lead vapors or particles are emitted from fresh lead paint; this emission ceases completely after forty-eight hours.

2. In a room (16 feet long, 13 feet broad, 17 feet high), a workman paints the four walls from the floor to a line situated 5 feet high. A sheet of filter-paper is wound round the head, neck and chest of the painter, who is under strict supervision in order to prevent him from touching the filter-paper with his fingers or brush. After two hours the work is finished, and on the paper three drops are plainly visible. The paper is left to stand for twenty-four hours over an osmic acid solution; forty-nine paint-drops become visible, and this number is considerably increased if the paper is examined with a magnifying glass.

Conclusion: Painting a room emits a considerable number of very minute invisible paint droplets.

3. Four men paint the whole of the room. Twenty pieces of paper are hung for twenty-four hours at different heights and in different parts of the room. The papers hung in the upper part of the room do not give the reaction of lead; the others do at an increasing rate when nearing the floor.

Conclusion: The lead emission from a painted surface tends downwards.

4. The room is painted again, and the air aspired through the keyhole passes in a glass tube containing two cotton-wool stoppers; then the air bubbles through diluted H_2SO_4. After twenty-eight hours, the first stopper gives the reaction of lead; the second stopper and the H_2SO_4 do not.

Conclusion: The lead emission from a painted surface consists of particles, not vapors.

5. Atmospheric air is aspired through a series of three bottles: the first is half filled with water; the second (capacity 25 pints) has been internally painted, two hours before the experiment started, with white of lead and oil; the third bottle is half filled with diluted H_2SO_4. After ninety-six hours, the H_2SO_4 in the third bottle gives the reaction of lead. But if a cotton-wool stopper is put between the second and the third bottle, the stopper gives the reaction of lead, and the H_2SO_4 does not.

Conclusion: Two hours after the completion of work, a painted surface still emits very small droplets or particles containing lead, but no lead vapors. — René Sand.

THE EARLY DIAGNOSIS OF INDUSTRIAL LEAD POISONING BY MEANS OF BLOOD TESTS. *Schnitter.* Deutsch. med. Wchnschr., June 26, 1919, 45, No. 26, 711–712. — The author remarks that the impending socialization of industry will demand three general measures in regard to workers in lead: the adoption of all possible safety measures, the elimination of especially susceptible workers, and the medical supervision of all employees. Supervision, he believes, will be most efficiently accomplished by means of periodical blood examinations. A worker showing more than 100 stippled cells per million should not be permitted to work with lead, and one with more than 500 per million should be considered definitely sick. The author reports that none of his cases of lead poisoning were free from stippled cells; the reason that they have been overlooked by other workers is that fine stippling is obscured by the counterstain. He recommends staining with azure of Manson's methylene blue alone, in searching for them. — T. J. Putnam.

DUST HAZARDS AND THEIR EFFECTS

Health Risks from Dust Caused by Buffing, Polishing, and Grinding Metals. *John Roach.* Safety Engin., May, 1919, 37, No. 5, 236–243. — The circumstances affecting the metal buffer and polisher's health and mortality caused the New Jersey Legislature in 1914 to enact a law authorizing the Department of Labor to compel the installation of exhaust systems in plants where buffing, polishing and grinding wheels were operated. The serious character of the health risk of workers employed in buffing and polishing metal goods may be understood from a study of statistics made in Newark, N. J., in which the statement is made that the death rate from tuberculosis in 1914 was 50 in 1000, and that after the dust removal systems had been in operation nine years, the death rate had been reduced to 6 deaths in 1000. In 1912, the New Jersey Department of Labor also made an exhaustive examination into the engineering principles involved in the control of industrial dusts, and, as a consequence, the specifications given in this article were prepared covering buffing, polishing and grinding wheels. A buffing and polishing room equipped with a blower system constructed in accordance with the New Jersey standards offers no health risks to the workers employed therein. — R. Thomson.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

Influenza Studies. I. On Certain General Statistical Aspects of the 1918 Epidemic in American Cities. *Raymond Pearl.* U. S. Pub. Health Ser., Pub. Health Rep., August 8, 1919, 34, No. 32, 1743–1783. — In this study the weekly mortality statistics of the influenza epidemic were analyzed for thirty-nine American cities. An extraordinary degree of variation was found among the several cities, in respect to the relative degree of explosiveness of the outbreak of epidemic mortality. An analysis of this variation by multiple correlation demonstrated that an important factor in its cause was the magnitude of the normal death rates observed in the same communities, particularly those death rates from pulmonary tuberculosis, and from diseases of the heart and of the kidneys. — K. R. Drinker.

Statements by the United States Public Health Service Relative to a Possible Recurrence of the Influenza Epidemic During the Fall or Winter. U. S. Pub. Health Ser., Pub. Health Rep., September 19, 1919, 34, No. 38, 2105–2110. — K. R. Drinker.

New Tuberculosis Directories. U. S. Pub. Health Ser., Pub. Health Rep., October 3, 1919, 34, No. 40, 2189. — The National Tuberculosis Association announces the publication of a new edition of its tuberculosis directories. The address of the Association is 384 Fourth Avenue, New York City. — L. A. Shaw.

The Malaria Problem of the South. *H. R. Carter.* U. S. Pub. Health Ser., Pub. Health Rep., August 22, 1919, 34, No. 34, 1927–1935. — In many sections of the South malaria constitutes little or no problem at all; but in those sections where it is really prevalent, the question of malaria constitutes the most important sanitary problem with which we have to deal. Though malaria does not give a high mortality, an infected man may be half sick all the time, and his efficiency as a workman thus reduced very seriously. Prevalence of malaria has been known to cause prospective industrial development in certain localities to be abandoned completely. This disease has been slighted in the past by health officers for two reasons: (1) The progressive local health officers of the South are those of the city; (2) malaria in certain localities is looked upon as an accepted and unavoidable fact, from which immunity can only be acquired by a certain period of ill health.

The remainder of the article deals with the areas of prevalence, the mode of malaria conveyance, and the methods of malaria control. — L. A. Shaw.

July Report of the Division of Venereal Diseases, United States Public Health Service. U. S. Pub. Health Ser., Pub. Health Rep., September 5, 1919, 34, No. 36, 2019–2022. — This report consists of a table covering the activities of 131 clinics operated under the joint control of the United States Public Health Service and the state Boards of Health during July, 1919. During this month 5,624 new cases of venereal disease were admitted, making a total of 16,871 persons under treatment. — K. R. Drinker.

Plan Proposed by the United States Public Health Service for Combating Venereal Disease in Industry. Division of Venereal Disease, U. S. Pub. Health Ser. — The following is an outline of the plan proposed by the U. S. Public Health Service for combating venereal diseases in industry:

1. Distribution of educational pamphlets, posting of bulletins, placards, etc. These may be obtained on request from the U. S. Public Health Service, 228 First St., N. W., Washington, D. C.

2. Confidential interviews between employees and executive entrusted with execution of plan.

Free lectures by federal and state health officers who will visit plant upon request.

3. Examination by competent doctors of employees who have or think they have a venereal disease. If feasible, time off with pay should be allowed where gonorrhea or syphilis is in infectious stage. Utilizing of existing medical or welfare organization in plant to include venereal disease control work and investigation by proper person into family condition of infected married workers.

4. Disposition of cases for treatment either by individual physician at hospital or plant clinic, with conscientious follow-up work. Clinics operated by U. S. Public Health Service, state or local Boards of Health are now available in many communities. Ascertain if your community has one, and use it. A complete list of the locations and addresses of these clinics may be had on request.

5. Physical examinations of patients for a reasonable time after they are pronounced cured of gonorrhea. Few cases of syphilis can be cured in less than several years' time, but they will *cease to be infectious and dangerous to others* as soon as all open sores have been healed, which will require usually only a few months.

6. Realization on part of citizens generally that, for purposes of protecting the public health, *venereal diseases are diseases — not crimes necessarily.* — K. R. Drinker.

The Department of Health's Venereal Disease Advisory Service. Weekly Bull., N. Y. City Dept. Health., October 25, 1919, 8, No. 43, 337–339. — The function of the Venereal Disease Advisory Clinics of the Bureau of Preventable Diseases is primarily to combat the advertising quack, the patent medicine agencies, and other irregular methods of cure. All those in need of authoritative and medical advice are counseled to visit this new clinic, with the result that several thousand individuals are advised annually. — L. A. Shaw.

Venereal Disease Control Activities. *C. V. Herdliska.* U. S. Pub. Health Ser., Pub. Health Rep., October 10, 1919, 34, No. 41, 2241–2247. — A report of the activities of the Division of Venereal Diseases of the Public Health Service during the fiscal year ending June 30, 1919. This campaign was conducted through physicians, dentists, druggists, nurses, medical and allied colleges, professional journals and advertising media throughout the country. — L. A. Shaw.

Druggists Enlist in Fight against Venereal Diseases. Ohio Pub. Health Jour., June, 1919, 10, No. 6, 221–222. — The state Department of Health of Ohio announces that 562 druggists of the state have entered into an agreement by which they will cease selling patent medicines for treatment of venereal diseases and will give full co-operation in the eradication of these infections. — L. A. Shaw.

Publicity Aids Venereal Disease Fight. *J. M. Shapiro.* Ohio Pub. Health Jour., June, 1919, 10, No. 6, 224. — Instances of the value of newspaper publicity and lectures in the control of venereal diseases. — L. A. Shaw.

Certain Features of the Education and Publicity Campaign for the Control of Venereal Diseases in New Jersey with Some Apparent Results. *J. H. Smith, Jr.* New Jersey State Dept. of Health, Pub. Health News, September, 1919, 4, No. 10, 259–263. — The success of the campaign against venereal diseases throughout the state of New Jersey, conducted through the medium of billboards, street cars, moving picture houses, etc., may be registered by the growing interest of the medical profession and by the steady increase of cases submitting themselves for examination. — L. A. Shaw.

Bureau of Venereal Disease. Bull. Wisconsin State Board of Health, April–June, 1919, 3, No. 6, 9–10. — Wisconsin has declared all venereal diseases as communicable and requires, therefore, that they be reported to the state Board of Health. Whenever a case is found on premises where it cannot be properly isolated or controlled, and when the infected person refuses to be subjected to the necessary treatment, a placard is posted on the premises: "Venereal Disease Here." Nor can such a person leave the premises without the permission of the health officer. No person afflicted with venereal disease is allowed to work in any occupation capable of transmitting the infection to other persons. — L. A. Shaw.

Value of Venereal Disease Case Reports. U. S. Pub. Health Ser., Pub. Health Rep., October 17, 1919, 34, No. 42, 2294–2297. — Adequate statistics regarding venereal diseases have been made available by the army medical examinations. Information thus obtained during the war must now come from other sources, namely, the physician in charge. Fear of offending his patient, obstinacy, and indifference have elicited objections on the part of the physician in fulfilling his prescribed duty. When the preservation of public health is at stake, however, such objections must be overridden. — L. A. Shaw.

The Diagnostic Value of the Wassermann Test. National Health Insurance, Medical Research Committee, London, H. M. Stationery Office, 1918, 54 pp. — A detailed statistical study of the value of the complement-fixation test for syphilis, in the hands of several skilled serologists. The conclusions drawn are distinctly in favor of the diagnostic value of the test. — T. J. Putnam.

The Laboratory Diagnosis of Gonococcal Infections, and Methods for the Detection of Spirochetes. National Health Insurance, Medical Research Committee, London, H. M. Stationery Office, 1918, 49 pp., colored plates. — An exhaustive report upon the technique of the various laboratory methods, and their fields of usefulness. Jen-

sen's modification of Gram's staining method for gonococci is recommended, and elaborate directions are given for obtaining uniform, accurate results. The wider use of the focal gonococcal reaction, and especially of the complement-fixation test is suggested, and instructions are given for each.

The report on methods of demonstrating spirochetes is largely taken up with a consideration of methods for adapting ordinary microscopes to dark-field work, which is much preferred to all other procedures for detecting organisms which are difficult to stain. — T. J. Putnam.

OCCUPATIONAL AFFECTIONS OF THE SKIN AND SPECIAL SENSES

The Injurious Effects of Oils and Vaselines on the Skin. *Prof. Bettmann.* Original in M. m. W., 1918, p. 1344. Following is a translation of the abstract in Therap. Monatsh., March, 1919, 33, No. 3, 117–118. — The writer has observed four types of injurious effects produced on the skin by various oils and vaselines used in the industries. He believes that the effects of these substances are due to the presence in them of irritating tar products. It is important to make a differential diagnosis between these conditions and other recognized diseases of the skin.

The four types of lesions observed by Bettmann are:

1. A sluggish, often itching folliculitis (differential diagnosis: tuberculosis).
2. Follicular keratosis (differential diagnosis: pityriasis rubra pilaris, psoriasis, Darier's disease).
3. Melanoderma of exposed skin surfaces (differential diagnosis: Addison's disease, arsenic melanosis, pigmentation after lichen ruber planus).
4. Circumscribed, warty areas (differential diagnosis: lupus erythematosus).

Not infrequently two or more of these types are seen in the same patient and this aids materially in the differential diagnosis. Predisposing factors are previous skin disease, exposure to heat and light, etc. The conditions are chronic and very resistant to treatment. — G. B. Wislocki.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

Experience in Accident Prevention Work. *H. P. Heyne.* Safety Engin., May, 1919, 37, No. 5, 252–255. — A safety campaign inaugurated by the United Alloy Steel Corporation, Canton, Ohio, August 1, 1917, has resulted in a reduction of 54.9 per cent. in the days lost due to injuries in 1918, over that for 1917. Tables showing days lost by departments in 1918, injuries based on length of service, and injuries based on occupations are given in the article. Every foreman is a member of the safety organization, and the appointing of workmen's safety committees has made the employees feel that they are being consulted in regard to the guarding and eliminating of unsafe practices and procedures. — R. Thomson.

Reducing Accident Risks. Factory, October, 1919, 23, No. 4, 980–988. — Among the brief articles under this head may be noted Selling Safety to Employees, Getting the Foreigner to Read, Keeping Hazards in Mind. The first article calls attention to the necessity for preparing for a safety campaign by studying carefully the attitudes of the various people concerned in safety toward the movement and toward one another. This will determine the exact procedure of the safety engineer. In no case can he expect to do all the work himself. He should have salesmen in all departments who can be drawn together through some sort of safety organization.

One plant has followed the plan of having local representatives of each foreign group translate into their own languages all safety notices.

The Hood Rubber Company has adopted a scheme for keeping hazards in the minds of their workmen. When any piece of equipment is discovered to be unsafe, a red ticket is placed upon it until changes or repairs are made. — C. H. Paull.

The Library's Part in the Reduction of Industrial Accidents. *Estelle L. Liebmann.* Safety Engin., July, 1919, 38, No. 1, 25–27. — Libraries of every description, whether public or private, can be of the greatest value in the problem of accident prevention. There are about 2500 special safety engineers in this country and between 40,000 and 50,000 people whose duties are partly connected with safety. There are only four libraries in the United States that have made accident prevention their speciality. The greater part of the literature is to be found in pamphlets, documents and periodicals. The most valuable government documents are those of the Bureau of Labor Statistics in Washington. For the engineer and technical man the safety specifications published by the United States Steel Corporation, the Shipping Board and the DuPont Company rank highest. The Bureau of Standards will eventually issue safety standards. These are at present in a tentative stage and it may be a few years before the final draft is adopted. — R. Thomson.

Training Courses in Safety and Hygiene in Building Trades. Federal Board for Vocational Education, May, 1919, Bulletin No. 31, pp. 126. — This bulletin has been prepared to form the basis of instructions in safety and hygiene as applied to the building trades and is intended primarily for use in vocational schools. It consists of two parts. The first portion dealing with the proper and safe con-

duct of work in the building trades is made up of nine chapters, the more important of which deal with the questions of demolition, hoisting, scaffolding, accidents in allied trades and emergency provisions. When one realizes that industrial accidents are caused in a great many instances by the lack of attention to matters which are small and may seem trivial, the value of this pamphlet becomes apparent, for here each of these important details receives due attention. A series of excellent photographs accompanies the text. The second portion of the book occupying some ten pages is devoted to suggestions to teachers in vocational schools. A brief bibliography closes the volume. — L. Greenburg.

Methods of Securing Attendance at Railroad Safety Meetings. *Marcus A. Dow.* Safety Engin., June, 1919, 37, No. 6, 289–291. — The three things that the General Safety Agent of the New York Central Lines has found most essential to the success of safety rallies are: (*a*) a good program; (*b*) effective advertising; (*c*) co-operation of officials. A meeting where men are not bored by a dry program but are assured of one that runs according to schedule with something of interest throughout, a short but intensive advertising campaign, and a short, concise meeting generally, put enthusiasm into the whole proceedings and make attendance irresistible. The co-operation of the officers is just as important in getting a crowd to a safety rally as it is to any other feature of safety work. This spirit of official co-operation has been developed in the New York Central Lines to a degree that would in itself insure successful attendance. — R. Thomson.

Safety to Life in Retail Stores and Schools. Report of the Committee on Safety to Life, National Fire Protection Association. Safety Engin., August, 1919, 38, No. 2, 71–81. — The report of the committee, wholly tentative, is in two sections, one relating to Safety to Life in Retail Stores and the other, to Safety to Life in Schools. The fundamental difference between the store and the factory is the inability to control the number of persons who enter a retail store. In a factory the management, if it will, can meet the specific conditions laid down for a given building. In a retail store, however, the only limitation is the number of people that the building will hold with due regard to ability to move about and be waited on. The committee in devising a plan of establishing the number of occupants that may use retail store buildings has in mind the following fundamental principles:

1. To forbid the use of signally dangerous building for retail store purposes.
2. To encourage the improvement of existing buildings not up to a reasonable standard of safety.
3. To give due recognition to essential life-safety factors such as superior construction, protection of vertical openings, provision of horizontal exits, moderate heights, and provision of automatic sprinklers.
4. To encourage the best possible construction and protection for new retail store buildings.

The committee expects to put its conclusions and recommendations in specific form and to arrange its credits for various features listed above into a tabulation such as the one which is part of the factory egress code. There follow sections discussing construction, area, emptying-time factor, stair and elevator requirements, and specific egress features.

A skeleton report submitted indicates the lines along which the problems of Safety to Life in School are being attacked and it will be observed that the general outline follows as closely as may be the plan already adopted in the case of factory buildings. — R. Thomson.

Safety Education in the Schools. Am. Industries, October, 1919, 20, No. 3, 11–12. — A portion of an address given by Mr. Whitney of the National Safety Council in which he calls attention to the possibility of laying the basis for safety education in the public schools. Attention is called to the success of Dr. Payne of St. Louis in developing safety education for children. — C. H. Paull.

Teaching Safety in the Schools. *E. George Payne.* Safety Engin., June, 1919, 37, No. 6, 302–306. — By the introduction of instruction in accident prevention in the public schools of St. Louis, it was found that interest in the subject taught was intensified and the desired result achieved in a knowledge and appreciation of accident prevention. The procedure was along three lines: first, schoolroom instruction; second, dramatization; and third, the organization of the school into a welfare community for the purposes of safety. The results of this instruction have made children conscious of accidents as a matter of real social concern, and have enabled them to take an intelligent instead of an ignorant attitude toward accidents and accident prevention. The pupils themselves have established habits of carefulness that tend to prevent accidents, and they have been stimulated to greater endeavor in the regular school course, in that the subject of accident prevention provides for the effective use of the mother tongue, correct reading, etc. Finally, instruction in accident prevention has brought the child into contact with life situations, institutions and processes. — R. Thomson.

Fighting Fires Before They Start. Factory, Oct., 1919, 23, No. 4, 779–782. — This is a series of short comments drawn from experience, on procedures and devices for preventing serious fires. Among the valuable suggestions offered is a plan for drill in coupling hose inaugurated in the plant of the Ohio Brass Company. Several devices for calling attention to the location of fire alarm boxes and small fire-fighting equipment are suggested. The underlying idea of all of these is to place directions or indicators in such places that they cannot be hidden by any form of obstruction, and that they can be seen plainly from all directions.

An interesting fire-drill plan of a superintendent of a factory in the Middle West is described. This superintendent has a red flag which from time to time he places in different parts of his yard. Employees are instructed that upon seeing this flag they are to turn in an alarm at the nearest box. When once the alarm is sounded, a competition between the various fire companies of the plant begins. The company first getting a stream of water on the flag is the winner. — C. H. Paull.

Water Departments and Private Fire Lines. *Dow R. Gwinn.* Am. Arch., September 24, 1919, 116, No. 2283, 335–337. — Fire protection of a general character is provided by the municipality. Where further protection of a special nature is desired, it may be obtained by independent equipment or by special connections with mains. The latter case entails a great many questions as to compensation, equipment, inspection, guarantees and so forth. Regulations governing the relations between the water department and the individual are suggested and illustrated with excerpts from court decisions. The chief points of the article may be summarized as follows:

1. Special compensation above the cost of water used shall be provided.
2. The water company or department shall install all service pipes.
3. No interconnection of the city supply with an independent supply shall be permitted.
4. No guarantee to extinguish fires or to protect property shall be given. — G. M. Fair.

Chemical Fire Hazards. *W. D. Milne.* Jour. Indust. and Engin. Chem., July, 1919, 11, No. 7, 701. — The author reports that a sulphur black dye stored in a barrel was found to have caught fire spontaneously. The manufacturers claimed that too much sulphur, which was present, was responsible. — Worth Hale.

Grain Dust Explosions and Fires. *David J. Price.* Safety Engin., June, 1919, 37, No. 6, 296–300. — Between March, 1916, and October, 1917, dust explosions caused the destruction of four of the largest grain and cereal plants in the United States and Canada. In six of the largest explosions and fires in 1916 and 1917, thirty-nine persons were killed, sixty injured, 2,500,000 bushels of grain lost and property worth $8,000,000 destroyed. A campaign was conducted by the Department of Agriculture in a direct appeal to the workmen by a system of pledge cards on which a number of simple causes in control of the workmen were outlined. By moving pictures and slides, and through the hearty co-operation on the part of the grain and milling companies throughout the country, it has been possible, according to a leading grain journal in an issue in January of this year, to record a decrease of 30 per cent. — R. Thomson.

The Chlorates. *F. M. Griswold.* Safety Engin., June, 1919, 37, No. 6, 291–295. — In a brief review of the fire and explosive hazards of the chemical compounds which are classed as chlorates, the most common of which are chlorates of potassium, sodium, and strontium, the author calls attention to the necessity of taking some restrictive measure to insure proper storage, handling and use. While the Explosive Law framed by Congress in October, 1917, had as its prime motive the prevention of disloyal persons from procuring explosives or their ingredients, it is probable that its enforcement as an emergency measure will become somewhat of a dead letter. An effort should be made to secure safety in the matter by suitable restrictions along the lines suggested by Chief Inspector of Explosives, Major Cooper-Key of England, which are as follows:

1. The elimination, so far as may be possible, of combustible material in packages containing chlorate.
2. The establishment of separate buildings, of fireproof construction, for the storage of chlorate.
3. Absolute cleanliness: i.e., the outside of kegs, the floor and walls of the store should be kept clean of all dust and dirt and no one should enter the building in his ordinary shoes. Either these should be taken off or overshoes should be provided, as in a gunpowder magazine.

To these regulations should be added the further precaution of prohibiting the storage of chlorates in such locations and under such conditions that they may not by any possibility of accident or design be brought into contact with other substances known to be incompatible with them. — R. Thomson.

Lacquers, Shellacs, Enamels and Japans. Tentative Safety Standards Prepared by the State of New Jersey. Safety Engin., July, 1919, 38, No. 1, 15–23. — The rules herein given apply to all establishments using lacquers, shellacs, enamels and japans either by spraying, hand brushing or dipping methods except where not more than 2 quarts of material, inclusive of stock and thinner, are used per day in the hand brush or air brush process. The location, construction, ventilation, lighting, heating and cleaning of rooms where hand brush or dip tank processes are carried on are fully covered in this article, together with the storage, fire protection, and general requirements of such establishments. — R. Thomson.

INDUSTRIAL SURGERY

THE TECHNIQUE OF HELIOTHERAPY. *A. Aimes.* Presse méd., July 7, 1919, 38, 525. — Heliotherapy should be prescribed in definite doses, and thoroughly supervised by the doctor in charge. For general infections, such as tuberculosis, practically the whole body should be exposed. The period and extent of exposure should be graduated, beginning with fifteen minutes three times a day upon the legs and forearms. The patient should recline in the open, and should receive the full rays of the sun, unprotected by glass or partial shade. The head, however, and other parts of the body as indicated, should be shaded by awnings or light coverings. Strong winds, or temperatures below 20° or above 50°C. are contra-indications to the treatment. The exposure should always be suspended for half an hour before and after meals. For wounds, the treatment may be regional or local merely. The wound may be protected from flies by netting, or better by the evaporation of volatile oils in the vicinity. It should be carefully cleaned before each exposure. — T. J. Putnam.

A CONTRIBUTION TO THE STUDY OF "STIFF AND PAINFUL SHOULDER." *A. J. Brown.* Surg. Gynec. and Obst., October, 1919, 29, No. 4, 381–386. — In an excellent article on this subject, Brown shows how to distinguish and treat a class of cases that has not been differentiated before. These cases have a rupture of fibers of the insertion of the latissimus dorsi and teres major muscles. The special diagnostic points are: (*a*) pain on stretching these muscles; (*b*) distinct point of tenderness over site of injury in the tendon; (*c*) early development of moderate atrophy of the deltoid muscle by involvement of the circumflex nerve in the inflammatory or reparative processes. The author outlines a conservative method of treatment for these cases. — C. C. Lund.

ENDOPROTHESES OF REINFORCED RUBBER FOR LOSSES OF SKELETAL BONE. *Delbet, Girode* and *Contremoulin.* Presse méd., July 31, 1919, 42, 536. — The authors describe two cases in which loss of substance of the radius had been replaced by rubber-covered metal protheses, with good results. Sheets of rubber have also been used for reconstructing tendons, protecting nerves, and for guarding the abdominal wall against hernia. — T. J. Putnam.

PRIMARY SUTURE OF GUNSHOT WOUNDS. *S. F. Koch.* Surg. Gynec. and Obst., October, 1919, 29, No. 4, 362–373. — The author describes his methods of treating war wounds and discusses the application of these methods to civil surgery. — C. C. Lund.

INJURY DUE TO INDELIBLE PENCIL. *Sigmund Erdheim.* Wien. klin. Wchnschr., July 3, 1919, 32, No. 27, 726.—A report to the Vienna Medical Society of a case in which the point of a violet copy pencil was forced into the palm of the hand. The small wound did not heal but developed into a fistulous ulcer. There was no pus, only a slightly cloudy serous, violet fluid appeared. The cause of the slow healing is the necrotizing action of the poison for all tissues. The dye, methyl violet, in the copying pencil dissolves in the tissue fluids and travels deeper and deeper, thus enlarging the necrotic area. Prompt excision of the offending pencil point with surrounding tissue is the best procedure for inducing quick healing. — B. Cohen.

FATIGUE AND OCCUPATIONAL NEUROSES

EARLY CLOSING HELPS EFFICIENCY OF WORKERS. *May L. Manning.* The National Civic Federation Review, July 30, 1919, 4, No. 17, 9, 19. — G. E. Partridge.

AN INVESTIGATION OF CHANGES IN THE BLOOD AND URINE RESULTING FROM FATIGUE. *A. B. Hastings.* U. S. Pub. Health Ser., Pub. Health Rep., August 1, 1919, 34, No. 31, 1682–1691. — The attention of the writer has been centered on the hydrogen-ion concentration of the urine and blood plasma, and the alkaline reserve of the latter as modified by muscular work. Studies reported were made for the most part on the urine of men and the blood of dogs. The histories and diets of the subjects investigated were carefully followed.

The types of exercise studied consisted in: (1) dogs running in a treadmill; (2) men engaged in mechanical operations of various degrees of arduousness at an automobile factory; (3) men participating in a 12-mile Marathon race; (4) entrants in a 6-day bicycle race; (4) a man in a 10-mile walk. The results of the observations are summarized as follows:

1. Exercise produced a diminution of bound carbon dioxide of the blood plasma. The depletion, however, did not progress to such a point that the reaction of the plasma was significantly altered.

2. The lowering of the bound carbon dioxide was a function of the rate and the amount of exercise.

3. The rate at which the bound carbon dioxide returned to its original value was related to the amount of exercise.

4. The urine of men engaged in manual labor tended to be of a slightly higher degree of acidity than that of men at rest. This statement could only be made of the class as a whole, and could not be reliably applied to individuals without accurate knowledge of their diets.

5. The urine of physically strong men was regularly slightly more acid after work than before; the

urine of physically weak men showed wide variations in its reactions from day to day.

6. When the muscular activity was such that the subject was intensely fatigued, there was invariably an increase in the hydrogen-ion concentration of the urine. — C. K. Drinker.

Rhythm in Industry. U. S. Pub. Health Ser., Pub. Health Rep., July 25, 1919, 34, No. 30, 1621–1622. — Rhythmical movements occurring in machine operations may prove significant in occupational fatigue. The possible importance of rhythm in industry may be fourfold:

1. In relieving attention and its consequent fatigue.

2. In rendering more uniform the metabolism and recovery involved in the operation by evenly distributing the work.

3. In masking fatigue effects.

4. In increasing or decreasing accident hazard according to the type of accident causation. — L. A. Shaw.

NUTRITION AND METABOLISM

Studies of Food and Nutrition. Am. Jour. Physiol., September, 1919, 19, No. 4. — This issue contains the following articles based upon observations in the army:

The Practicability of Feeding a Scientifically Balanced Ration in Army Corps. *R. J. Anderson.*

Average Food Consumption in the Training Camps of the United States Army. *J. R. Murlin* and *F. M. Hildebrandt.*

Variations in Strength and in the Consumption of Food by Recruits and Seasoned Troops. *P. E. Howe, C. C. Mason* and *S. C. Dinsmore.*

Note on the Acid-Base Balance of Army Rations. *N. R. Blatherwick.*

Dried Vegetables for Army Use. *S. C. Prescott.*

American Military Hospital Dietaries. *R. G. Hoskins.* — P. G. Stiles.

Studies on the Influence of the Type of Diet. *E. Abderhalden.* Arch. f. d. ges. Physiol., June 17, 1919, 175, Nos. 3–6, 187–326. — A report of extended experiments upon the influence of minor constituents of the diet upon growth and condition of animals. The evidence for the existence of vitamines or nutramines, especially of the fat-soluble type, is impressive. — P. G. Stiles.

Roentgen Findings in Nutritional Skeletal Damage. *Konrad Staunig.* Wien. klin. Woch., July 3, 1919, 32, No. 27, 712. — Diseases causing skeletal damage of nutritional origin are observed to occur in some local areas as well as sporadically, and are claimed to attack females of all ages almost exclusively. The bone structure shows regressive changes. The single trabeculae of the spongiosa appear narrower and the narrow spaces correspondingly wider. The cross and oblique channels appear mostly obliterated, while the vertical ones are preserved. The bone thus appears longitudinally striated. Spontaneous fractures cause no noteworthy acceleration of skeletal atrophy. Deformations like those in osteomalacia were not found. It is concluded that the soft tissues in the bone must have lost in consistency. — B. Cohen.

WOMEN AND CHILDREN IN INDUSTRY

The Women's Reward. *Clementina Black.* The Women's Industrial News, April, 1919, 22, No. 83, 13–16. — The author implies that, while the material reward to women for their work in wartime industries has been large (but not always to the improvement of the class), the main chance for benefiting women through their work has been allowed to go by. To let these women fall back from the new level into the old unskilled and underpaid labor is stupid, cruel and wasteful. They ought to have had opened to them every opportunity for training and developing their newly-awakened faculties. A part of the surplus earnings gained in wartime ought to have been directed to this educational end. — G. E. Partridge.

Women in Transportation. Bull. N. Y. State Ind. Com., September, 1919, 4, No. 12, 237, 239. — Investigations of the employment of women in transportation companies showed need of state regulation to give women thus employed the same protection as those employed in factories and department stores. The laws enacted as a consequence of these investigations are herein discussed, with special reference to the new arrangements which the companies were compelled to make in order that women employees might be retained in conformity with the new laws. — L. A. Shaw.

The Protection of Expectant Mothers at Work During the War. *L. Bargeron.* Rev. d'hyg., April, 1919, 41, No. 4, 317–335. — In drawing up a law for the protection of expectant mothers in factories the Commission of Labor recognized that it would not do simply to forbid the employment of pregnant women in factories. This would discredit motherhood and would promote prevention of conception, abortion, etc. The law as adopted contains the following points:

1. Pregnancy gives the woman a right to lighter employment if her work is injurious to her condition.

2. Overtime and night work are prohibited.

3. The woman must be seated when working; she must stop work four weeks before term and for four weeks after labor.

4. Wages must not be reduced on account of the changes incurred by this law.

5. It is the duty of the factory physician to watch over such women.

6. Each factory must have a nursing room conducted at the expense of the factory owners.

7. All mothers who have worked more than four months in the factory must be paid full wages during the eight weeks' absence. — A. Allemann.

Children in Factory Life. *M. Skinner.* The Women's Industrial News, April, 1919, 22, No. 83, 10–13. — The Home Office has required medical examination of boys and girls between the ages of 14 and 18 on their entrance into industrial life. Statistical reports from one medical examiner for the years from 1914 to 1918 show about 7 per cent. of a total of about 20,000 applicants rejected. — G. E. Partridge.

Administration of Child Labor Laws. Part 3. Employment Certificate System, Maryland. *F. H. Bird* and *E. A. Merritt.* U. S. Dept. Labor, Children's Bureau Publication No. 41, pp. 127. — In this pamphlet the employment certificate system in Maryland is fully and comprehensively discussed. The scope of the child labor laws is clearly defined. Then follows a description of the general administration, methods of securing certificates both as to physical and mental requirements, enforcement and record keeping. The main portion of the pamphlet closes with a summary in which the following are recorded as the most important changes needed in Maryland to bring about better protection of working children:

"(1) Issuance of all certificates throughout the state under such direct supervision by the Board of Labor and Statistics as will insure the strict enforcement of the age, educational, and physical standards set by law; (2) uniformity throughout the state in school-attendance requirements for children of school age and in educational standards for leaving school; (3) co-operation between the certificate-issuing officials and the school authorities in the eastern counties; (4) appointment of a larger number of inspectors and certificate-issuing officials; (5) provisions for insuring their competency; and (6) adequate support of both the child-labor and the compulsory-education laws by all the magistrates before whom prosecutions are brought." — L. Greenburg.

INDUSTRIAL SANITATION: ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

Planning for a Manufacturing Plant. *Henry T. Noyes.* Ann. Am. Acad. Pol. Sc., September, 1919, 85, No. 174, 66–89. — The writer deals with the various problems of planning for a new plant as seen from the standpoint of the manufacturer. A number of the points which are discussed have to do with safety, sanitation and the hygiene of the worker. In speaking of the theory of light, the writer points out the great advantage of obtaining light direct from the sky. Buildings should run east and west wherever practicable so that as uniform a light as possible will be obtained. Among the factors which have a part in determining the most desirable width for a plant building are cost, character of work and machinery necessary, and lighting. As far as possible stairways should not cut into the regular floor space of a room. Where they can be located in a wing or tower, they furnish excellent fire escapes.

In planning for toilet rooms, consideration should always be had for the possibility of an increase in the working force at some time in the future.

Among the precautions against fire hazard which are recommended are: a sprinkler system, as fireproof construction as possible, buckets and chemical extinguishers, a double source of water supply, fireproof partitions and fire escapes.

While direct radiation is an efficient method for distributing heat, it does not solve the problem of ventilation where a large number of workers are grouped in a relatively small space. Indirect radiation greatly assists ventilation, though it may not supply a necessary amount of heat in remote spots. A combination of these methods is sometimes used.

In planning a modern factory, space must be allowed for such service activities as lunch rooms, adequate rest rooms, hospital and dispensary rooms. — C. H. Paull.

Hygiene in the Reconstruction of Factories after the War. *L. Bargeron.* Ann. d'hyg., February, 1919, 31, 116–125. — Of particular danger are factories where poisonous products are handled and where explosives are manufactured. Since the use of white lead in paint work has been prohibited, the factories making hydrocarbonate of lead are much fewer, but as long as there are any at all, hygienic precautions must be observed. All factories where poisonous substances are handled should be built so that they can be washed with great streams of water. There should be a sick-room containing the necessary medicines to give first aid in cases of accidental poisoning, as well as a bathroom with douches where the workmen can take a sulphur bath at least once every two weeks. The men should receive careful instruction regarding the dangers of their work and wherever necessary should wear respiratory masks.

In the region devastated by the war, there are many sulphuric acid, nitric acid and hydrochloric acid factories where the workmen are exposed to poisonous vapors. The plans for rebuilding these factories should be made with a view to protect-

ing the health of the employees. In the establishments where hides are handled, precautions should be taken to avoid infection from anthrax by examining and disinfecting all hides received from foreign countries, especially those from South America, India and China. Workmen should wear gloves and should not be allowed to eat any meals in the factory. Tincture of iodine and nitrate of silver should always be at their disposal. — A. Allemann.

Improving Shop Efficiency by Better Lighting. *Thomas F. Chantler.* Safety Engin., August, 1919, 38, No. 2, 53–59. — The value of good lighting from the point of view of economy as well as that of safety has been recognized by leaders in different professions. It has been shown by facts and figures deducted from actual tests that good lighting actually does serve to hasten production, reduce spoilage, prevent accidents and conserve power in manufacturing and industrial lines. In addition there are what may be termed dollars-and-cents reasons why the manufacturer should do everything possible to supply his workers with the best illumination available. Good lighting has been definitely shown to contribute to the prevention of accidents and to the consequent reduction in insurance company rates for workmen's insurance. The general requirements of good illumination are given simply and briefly as follows:

1. There must be on all working surfaces, whether in horizontal, vertical, or oblique planes, a steady light of sufficient intensity for all working requirements.

2. A light on areas and walls adjacent to the working area comparable in intensity to the light on the working areas.

3. The light must be of a color and specular character suited to the purposes for which it is employed.

4. There must be freedom from glare and glaring reflections.

In this same issue of *Safety Engineering* will be found other articles relating to lighting. — R. Thomson.

What It Pays to Know about Factory Lighting: How to Regulate Your Window Light. *C. E. Clewell.* Factory, October, 1919, 23, No. 4, 776–779. — The writer points out the close relationship of properly regulated lighting and ventilation to health and absenteeism. Assuming that adequate window space has been provided, he shows how this space may be used to the best advantage only when facilities are provided for excluding excess light during certain times of the day. In using shades, care should be taken to locate them so that they will not cut off too much light from workers at a distance from the windows. In some cases shades may be advantageously located across the middle of the window; in others they are used to greatest advantage when drawn up from the bottom of the window. Each plant must study its own needs.

As far as possible workers should not be seated in such a way as to receive direct glare from window space. This difficulty can frequently be obviated by running benches at right angles to window areas.

In equipping windows with glass, the present tendency is to use transparent glass in the lower portions of all window space regardless of what is used above. The old idea that workers waste time looking out of windows is being superseded by the newer theory that it is restful for them to have a view beyond the limits of the factory, and that clear windows tend to dispel the feeling of being shut in. A series of interesting illustrations of different types of windows and window shades accompanies this article. — C. H. Paull.

Heating and Ventilating Problems. *W. Nygren.* The National Civic Federation Review, March 25, 1919, 4, No. 11, 8–9, 11. — There is a general lack of understanding of the purely commercial advantages to be gained by effective ventilation of working spaces. There is no reason why the quality of atmospheric conditions in working quarters and elsewhere should not be a matter worthy of government control, and certainly in all doubtful cases the properties of the atmosphere should be measured. The writer recommends a bureau to supervise and control all matters pertaining to ventilation. A concise analysis is given of the problem of good ventilating and heating. — G. E. Partridge.

An Automatic Regulator of Temperature. Riv. di ingegner. san., June 30, 1919, 12, No. 12, 78. — This apparatus renders it possible to maintain the temperature in a working room automatically between fixed limits. It consists essentially of a specially constructed thermometer and a small electric motor with reversible current which acts as a regulator of the cooling apparatus. The feeding of the current to the motor is controlled by a double interrupter, set in motion by the motor and by two electro-magnetic interrupters, which are under the influence of the current which is started by the thermometric column. Thus the thermometer presents two series of contacts to each of which corresponds one of the two circuits; one for the minimum, the other for the maximum. By moving the contact thorns on the graded scale, it is possible to fix the minimum and maximum limits between which the temperature is to be maintained. When the thermometric column falls and reaches the minimum contact, one of the currents is set in motion and opens the source of heat; when the column rises and reaches the maximum contact, the other current is set in motion and shuts off the source of heat. — A. Allemann.

Standards for Factory Wash Room Facilities. The National Civic Federation Review, July 30, 1919, 4, No. 17, 18–19. — A set of specifications for wash room facilities as planned by the Welfare Division of the Committee on Labor, a part of the Advisory Commission of the Council of National Defense. These standards are applicable to fac-

tories in general and "are a little better than the requirements of any state law." They include standards in regard to washing facilities, toilet arrangements and fixtures. — G. E. Partridge.

Stream Pollution and its Relation to the Chemical Industries. *Earle B. Phelps.* Jour. Indust. and Engin. Chem., October, 1919, 11, No. 10, 928–929. — The author discusses the desirability of treating factory wastes discharged into streams both from the point of view of chemical factory management and from the effect of such wastes upon the water for drinking purposes. — Worth Hale.

MEDICAL DISPENSARIES AND HOSPITALS IN INDUSTRIAL PLANTS

Keeping Workers Fit. *Albert E. Richter.* System, October, 1919, 26, No. 4, 622–626. — An intimate account of a plan developed for reducing absence through illness of an office force. Realizing that considerable money was being lost through absence due to illness, the Retail Credit Company began a careful study of the health needs of its employees. It found that a large number of its people knew little or nothing of their health condition. This led to the institution of regular physical examinations, from which grew a policy of health education. The most interesting feature of the whole procedure was the sincere attempt of the company to anticipate and prevent illness. Where necessary, vacations were given to prevent threatened breakdowns. These vacations were based upon the needs of the individuals and not primarily upon the term of employment, though a regular policy of granting yearly vacations is in operation.

Not only were the immediate facts of the physical condition of the worker studied, but where a solution of a difficulty seemed more remote, the company assisted workers in removing economic handicaps which resulted in worries not connected with actual employment. — C. H. Paull.

Our Shop Dental Dispensary. *Sanford De Hoit.* Ind. Management, July, 1919, 58, No. 1, 52–53. — A brief account of the experience of the R. K. LeBland Machine Tool Company in operating a dental dispensary. Since the establishment of the dispensary a large proportion of employees have availed themselves of this service. All work is done at company expense and on company time. The cost to the company has been $1.12 per patient treated. In return many employees have been kept on the job when otherwise they would have lost at least a half day for each visit to a dentist's office outside the plant. Besides the regular work of the dispensary, much has been accomplished along educational lines. — C. H. Paull.

INDUSTRIAL NURSING

Industrial Welfare Nursing. *Frances McGee.* Am. Jour. Nursing, Sept., 1919, 19, No. 12, 920–922. — The work of the industrial nurse is daily exceeding in scope the old established boundaries. With the ever increasing size of industrial organizations and the consequent larger number of employees, the first-aid room has assumed the dignity of a part of the main office, or, in some cases, of a separate building. Accurate records have become essential. To be of the greatest service, the industrial nurse must have the social spirit; she must be sympathetic so that it will be the tendency of the men to return for treatment; she must gain the confidence of her patients so that information may be obtained and advice offered. — L. A. Shaw.

INDUSTRIAL, PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

Housing — Democracy's Balance Wheel. *W. H. Ham.* The National Civic Federation Review, March 5, 1919, 4, No. 10, 4–6, 18. — This is an interesting account (with illustrations) of the housing work that has been done in Bridgeport. The writer thinks that now is the time to take a long look ahead and to devise methods of financing the housing of the industrial classes upon a basis that will become standard and more or less automatic; and, at the same time, we must consider carefully proper "zoning" of our cities and all the problems of expansion that have hitherto been neglected. Continuity of plan and permanency of results must be considered. The paper is suggestive, but does not offer many definite conclusions. — G. E. Partridge.

Bad Housing and Ill Health. *James Ford.* U. S. Bur. Labor Statis., Month. Labor Rev., July, 1919, 9, No. 1, 243–248. — Among the bad results of poor housing conditions are heavy increase in labor turnover, poor health leading to inefficiency, and growing discontent as a social evil. Of various types of houses mentioned, the writer points out the multiple house as the most unsatisfactory under usual conditions. The rest of his remarks deal primarily with the undesirable features of this type of dwelling. Among these features are danger from fire due to cheap construction, accident risk due to depreciation of cheap construction, defective orientation with reference to the points of the compass and neighboring buildings, health hazards due to excessive stair climbing in high dwellings, improper

lighting, sanitation, ventilation, overcrowding within dwellings and within areas where the multiple dwelling is common, and proximity to factories. — C. H. Paull.

Housing and Health. *J. H. McBride.* Public Health, Mich. Dept. Health, October, 1919, 6, No. 10, 439–451. — One of the chief causes of physical and moral degeneracy is to be found in the condition of the houses in which men live. Sickness, crime, drunkenness, insanity and high infant mortality rates occur where the housing conditions are worst. The effects of bad housing are not confined to the cities alone; they prevail in villages and on farms. Sickness is found to be in direct proportion to overcrowding: given the room space and size of families, an approximate estimate of the death rate may be given.

It is the business of the community to prevent any landlord from maintaining that which is a menace to the health of the neighborhood. It is the inhabitants of such disease-breeding hovels who spread infection, both directly through contact, and indirectly through the product of their industry. Furthermore, the working capacity and economic value of the individual are reduced by bad conditions of home life. The interest and animal vigor necessary for good work do not thrive in forbidding surroundings or in squalid quarters. — L. A. Shaw.

The Report of the United States Housing Corporation. Am. Arch., September 24, 1919, 116, No. 2283, 399–408, 411–414. — This is an extensive review of the *Report of the United States Housing Corporation*, a cloth-bound book of more than 500 pages, which treats of the housing of war workers undertaken by the Bureau of Industrial Housing and Transportation of the Department of Labor. The report deals with every phase of the question of industrial housing and gives more than 250 illustrations of typical examples in approximately forty-five different localities. The review is well illustrated and quotes at length from the report. — G. M. Fair.

Canada's Post-War Housing Progress. Conservation of Life, Commission of Conservation, Canada, July, 1919, 5, No. 13, 50–56. — The building of houses is incidental to the development of industry. One of the first necessities to obtain efficiency is the improvement of housing conditions. In fact, necessity rather than far-sightedness is the paramount cause of action. A housing scheme has been passed upon by the Dominion and Provincial governments for general application throughout the whole Dominion. The character of this housing scheme is herein outlined. — L. A. Shaw.

Housing Development as a Post-War Problem in Canada. *Thomas Adams.* U. S. Bur. Labor Statis., Month. Labor Rev., July, 1919, 9, No. 1, 248–254. — The writer points out some of the chief characteristics of the Canadian national housing project. This project provides for a loan fund of $25,000,000 to be distributed among the provinces pro rata to the population. Because of the provisions of the constitution of Canada the administering of this fund is left to the provinces and municipalities. The federal government has the responsibility of approving general schemes for each province and establishing standards. The provinces must eventually repay the loan to the federal government and administer the general scheme to the municipalities. The responsibility for repaying the loan to the province rests with the municipality, and this agency must also supervise the administration of the project to individuals. Since the adoption of the federal scheme most of the provinces have passed acts to take advantage of the loan. In general, the federal government is not attempting to establish exact standards, but wishes rather to establish such standards as are apt to be overlooked by the municipalities. — C. H. Paull.

INDUSTRIAL SERVICE AND MUTUAL BENEFIT ASSOCIATIONS

Welfare Supervision of Factories. Conservation of Life, Commission of Conservation, Canada, July, 1919, 5, No. 13, 56–58. — To maintain perfection in the health of the workers is as much a part of successful factory management as the perfection of processes, or the devising of machinery. In short, the human worker as well as the work must be studied. To this end there should be instituted in every factory a welfare department with the following distinct groups of functions: (*a*) personal — as regards the employees; and (*b*) structural — concerned with the conveniences of the buildings. These functions are described in this article. — L. A. Shaw.

Technical Features of Disston Cafeteria. *Arthur N. Blum.* Safety Engin., May, 1919, 37, No. 5, 247–251. — The benefits derived from industrial restaurants, especially in places more or less distant from town centers, where public restaurants are poor or not available at all, may be summed up in the following:

Direct Benefits

1. Marked improvement in the health of the worker.
2. Less sickness.
3. Less absence and broken time.
4. Less tendency to alcoholism.
5. Increased efficiency and output.

Indirect Benefits

1. Saving time of worker.
2. Salutary change from workshop.
3. Greater contentment of worker.
4. Better midday ventilation of workshop.
5. Increase of recreation and games in spare time.

The Henry Disston & Sons, Inc., Tacony, Philadelphia, while the country was at war, faced with an unparalleled labor shortage coupled with a ruinous labor turnover, realized that no other welfare undertaking could, under the prevailing conditions, be more beneficial and attractive to their employees than a modern factory restaurant. Consequently the company made a thorough investigation and finally based their design and equipment on the following:

1. That the best type suitable for quick service of large numbers (in fact the only type possible) is the cafeteria type of restaurant, in which the men serve themselves in passing along a counter on which the food is displayed.

2. It was decided that facilities, to start with, for about 600 people in one sitting should be provided.

3. It was decided to erect a new building with a view to finally accommodating about 900 people and having kitchen facilities to prepare 1500 meals at one time.

On these basic data this company prepared their technical specifications. The design and equipment which are the result of careful investigation and comparison, are described at length in this article. — R. Thomson.

INDUSTRIAL HEALTH LEGISLATION AND COURT DECISIONS: MALINGERING

Application of the Laws on Industrial Hygiene to Small Establishments. *L. Bargeron.* Ann. d'hyg. pub., March, 1919, 31, 171–176. — There has been considerable discussion in France as to the desirability of limiting the application of the laws on industrial hygiene to small establishments. The author takes the stand that no distinction can be made between small and large establishments. The principle of equality requires that the laws be applied equally to all citizens. If a small manufacturer in competition with large concerns cannot carry out the provisions of the law, he should give up his business. Otherwise he hurts the interests of the nation. — A. Allemann.

Impairment of Health of Coal Miner. Court Decision. U. S. Pub. Health Ser., Pub. Health Rep., August 29, 1919, 34, No. 35, 1976. — "It has been decided by the Supreme Court of Iowa (Gay *v.* Hocking Coal Co., 169 N. W., 360) that a coal miner whose health has been impaired may recover damages for such impairment when it is due to the failure of the employer to properly ventilate the mine as required by law." — K. R. Drinker.

Ordinance Regulating Laundries Held Valid. Court Decision. U. S. Pub. Health Ser., Pub. Health Rep., September 26, 1919, 34, No. 39, 2149. — The Supreme Court of Ohio has sustained the validity of an ordinance of the city of Cleveland regulating laundries (Yee Bow *v.* City of Cleveland *et al.*, 124 N. E. 132). The validity of the ordinance was attacked on the ground " that it provided that before a license could be issued, the laundries were to be inspected by the health commissioner to ascertain that the ventilation, plumbing and sanitary arrangements were satisfactory. It was contended that this gave arbitrary legislative and judicial powers to an administrative officer. The court, however, held the ordinance valid." — K. R. Drinker.

WORKMEN'S COMPENSATION AND INSURANCE

Court Decisions on Workmen's Compensation Law, August, 1916–June, 1919. Special Bull. No. 95 (constituting Part II of No. 87), New York State Dept. Labor. — This is a pamphlet of 402 pages covering court decisions during August, 1916–June, 1919, on the Workmen's Compensation Law on subjects other than constitutionality and coverage. This bulletin is in sequence to Bulletin 81 (Court Decisions on Workmen's Compensation Law), published in 1917, and constitutes Part II of Bulletin 87 which presents decisions on the subjects of constitutionality and coverage in the period from August, 1916 to May, 1918. — K. R. Drinker.

Compulsory Health Insurance Legislation. *W. S. Stone.* The National Civic Federation Review, February 15, 1919, 4, No. 9, 5–8. — The writer objects to compulsory health insurance legislation, at least in the form in which it was proposed by the Mills Bill (New York Senate, Bill No. 69, January 15, 1917). — G. E. Partridge.

Opinion in the United States on State Health Insurance. Labour Gaz., October, 1919, 19, No. 10, 1190–1191. — A discussion of reports on state health insurance by commissions appointed by the state of Illinois and the state of Pennsylvania. The Health Insurance Commission of Illinois in its final report finds against compulsory health insurance. There is no evidence that compulsory insurance has resulted in an improvement in health. The probable causes of this fact are herein stated. No definite health insurance measures were recommended in the report; but it was suggested that a new commission be appointed with a view to formulating remedial legislation.

The commission expressed the belief that sane means must be found to shift the care for sickness

cases from the shoulders of the sick wage worker. The lower the wage group, the less likely the insurance protection. Commercial health insurance is costly and subject to many restrictions, while the policy of labor organizations is to subordinate sickness insurance to life insurance. For these reasons it seems that those most in need of health insurance are the ones who evade it. — L. A. Shaw.

Some Lessons of the British Health Insurance Act. *Margaret Bondfield*. Am. Labor Legis. Rev., June, 1919, 9, No. 2, 202–203. — One of the first results of the British Insurance Act, the writer points out, was to bring the attention of workers and employers to the need of preventive medicine and unified health service. A most unfortunate feature of the British Act was its permitting of commercial insurance companies to serve in the capacity of approved societies. The writer notes that the tendency in this country (notably New York State) is to avoid a number of the obviously unsatisfactory features of the British Act. — C. H. Paull.

American Health Insurance Bill better than British Act. A Statement by *Mary Macarthur*. Am. Labor Legis. Rev., June, 1919, 9, No. 2, 204–208. — This article calls attention to the fact that we have profited by British experience in developing health insurance legislation. Miss Macarthur points out the provisions in the New York bill for local administration of funds, maternity benefits, and adequate medical and nursing care. The compulsory feature of the bill she considers essential to its successful operation. — C. H. Paull.

Health Insurance Bill as Developed from Tentative Drafts. Am. Labor Legis. Rev., June, 1919, 9, No. 2, 209–224. — A brief history of the development of the health insurance measure which passed the New York Senate, but failed of becoming a law in the Assembly. The bill in its final form was drafted so as to avoid antagonizing various possible opposing factions, among which were Christian Scientists, employers, and physicians. The full draft of the bill is given. — C. H. Paull.

Political Expediency as Well as Social Justice Calls for Action on Health Insurance. *Frederick M. Davenport*. Am. Labor Legis. Rev., June, 1919, 9, No. 2, 239–248. — A portion of an address by one of the sponsors of the New York health insurance bill. Mr. Davenport meets some of the arguments of opponents of the bill. He sees no serious danger of opposition from the medical profession, since that profession was carefully considered in drafting the measure. Legal difficulties should be even less serious than those which were presented in administering the compensation law.

The value of health insurance to the worker is emphasized by statistics from the Pennsylvania survey. The justice of distributing the burden of illness is maintained because of the social aspect of the whole problem. Rather than bring about a condition of greater antagonism between the employer and the employee, health insurance should tend to draw them nearer together by stabilizing labor on the one hand, and providing against unnecessary worry and hardship on the other. — C. H. Paull.

A Reconstruction Health Program. *John R. Commons*. Survey, September 6, 1919, 42, No. 23, 798–801. — Referring to the past experience of industry with the compensation laws and reduction of accidents, the writer calls attention to the economic value of health insurance. He states that the "doctor is the great producer of wealth" in that health is the basis of all productive activity. There is, however, a new and more and more commonly recognized function of the doctor. His chief service to the community must ultimately be to prevent sickness rather than to cure it. To this end, health insurance will make a valuable contribution in providing a consulting physician to whom the man of moderate means can go without feeling that a fee is to be collected at each visit. Industry can well afford to contribute to this cause because of the satisfactory reaction upon workers in cutting down absenteeism and similar wasteful conditions. — C. H. Paull.

REHABILITATION OF DISABLED EMPLOYEES

Dental Mechanics, Baking, Podiatry as a Vocation. Fed. Board for Vocational Education, Opportunity Monographs. — Three pamphlets dealing with the above trades as possible vocational opportunities for disabled soldiers and sailors. — K. R. Drinker.

INDUSTRIAL MORTALITY AND MORBIDITY STATISTICS

Industrial Morbidity Statistics. U. S. Pub. Health Ser., Pub. Health Rep., October 17, 1919, 34, No. 42, 2289–2294. — At a meeting of the American Public Health Association, Section on Vital Statistics, Washington, D. C., October 18, 1917, a Committee on Industrial Morbidity Statistics was appointed and instructed (*a*) to develop the minimum requirements for morbidity statistics into a system of standard morbidity records; (*b*) to prepare tables presenting the essential facts of sick-

ness as they arise from the tabulation of the records referred to; and (*c*) to outline plans by which employers of labor might be interested to adopt the uniform methods recommended. The work of the committee during 1919 was devoted chiefly to a consideration of the classification of diseases and occupations. An abbreviated list of causes of death in tabular form is appended. — L. A. Shaw.

Income and Infant Mortality. *Julia C. Lathrop.* Reprinted from Am. Jour. Pub. Health, April, 1919, 9, No. 4, 270–274. — An investigation of eight cities by the Children's Bureau approaches infant mortality from the viewpoint of the co-existence of certain conditions of life with varying infant mortality rates. Since these conditions are largely governed by the family income, the earnings of the father were made the subject of careful investigation. Emphasis is laid upon the fact that 46 per cent. of infant deaths occur during the first month of life, and that many of these deaths are caused by conditions antedating birth. The contrast between the most favorable and the least favorable rates in the cities studied indicates the favoring result of income which permits proper housing, proper surroundings and a fair degree of education. — L. A. Shaw.

ABSTRACT OF THE LITERATURE
OF
INDUSTRIAL HYGIENE

VOLUME I | JANUARY, 1920 | NUMBER 9

CONTENTS

	PAGE
General	141
Systemic Occupational Diseases: Occurrence, Treatment and Prevention	144
Poisonous Hazards and Their Effects: Gases, Chemicals, etc.	144
Dust Hazards and Their Effects	146
Occupational Infectious Diseases: Occurrence, Treatment and Prevention	147
Occurrence and Prevention of Industrial Accidents	148
Industrial Surgery	148
Fatigue and Occupational Neuroses	149
Nutrition and Metabolism	150
Women and Children in Industry	151
Industrial Sanitation: Illumination, Ventilation, Heating, Water Supply, Sewage Disposal	152
Medical Dispensaries and Hospitals in Industrial Plants	153
Industrial, Personal and Community Hygiene: Housing, etc.	153
Industrial Management in its Health Relations: Special Tests in the Selection of Employees	154
Industrial Service and Mutual Benefit Associations	154

GENERAL

THE UNIVERSITY OF IOWA AS A STATE MEDICAL CENTRE. *Harold Chamberlain.* Mod. Med., Oct., 1919, 1, No. 6, 478–484. — A popular article from the lay point of view, showing a very suggestive and comprehensive plan of health work in a state built up around a state university with large hospital facilities. The plan combines the care of the indigent poor, hospital care for both children and adults, research, teaching, and laboratory work, and public health instruction. The organization and development should prove of interest especially to state and city departments of health, as furnishing a concrete example of a large health centre that is successful. — A. B. Emmons.

MEDICAL SUPERVISION OF STUDENTS AT WISCONSIN. *C. R. Bardeen.* Mod. Med., Oct., 1919, 1, No. 6, 468–477. — The history of the development of the medical supervision and care of the students at the University of Wisconsin is outlined under three headings: (1) *Prevention of the Spread of Infectious Diseases.* The control of infectious diseases is accomplished by the excellent custom of reporting minor ailments immediately for treatment in isolation. (2) *The Promotion of Good Hygienic Conditions.* This is assured by the medical staff which gives advice in regard to university property and recommends for outside rooming and boarding only the most sanitary premises. (3) *Personal Care.* Instruction in personal and community hygiene and physical examinations, in which the students are graded as in scholastic work, are included in this part of the supervision. Special attention is given to students who receive below B in a physical examination. Active tuberculosis is excluded.

Students are encouraged to consult the medical staff freely. Eighty per cent. seek advice at least once yearly, making 30,000 to 40,000 calls annually. Days in bed average 1 + per student per college year. The results have been striking. Nasopharyngeal infections, in which complication developed, decreased from 50 per cent. to 10 − per cent., and the average time lost from work, from $8\frac{1}{2}$ to $2\frac{1}{2}$ days. These results are an example of what may be called a

test of preventive medicine under most favorable conditions. The development of the physical equipment and staff during nearly ten years is of interest as showing the necessary budget, equipment and staff needed to care for such a group of 5000 persons in an ideal way. Professor Bardeen emphasizes the greater advantage of a quiet individual talk over the formal course for teaching hygiene, especially sex hygiene. This opportunity is afforded by the daily clinic. — A. B. Emmons.

Medical Inspection of Young Workers. Progress, Jan.–March, 1919, 14, No. 1, 25. — This is an article recording the important fact that by the Education Act of 1918 medical inspection and treatment are extended to include those who are in attendance at continuation schools, thus reaching all workers between the ages of fourteen and eighteen. Effects upon housing conditions and upon the conditions in factories, the writer thinks, will be marked, and he expresses the belief that ill-lighted and ill-ventilated factories are responsible for much of the falling off in health that is noticeable in boys after they leave school. Compulsory medical inspection will do much to remedy the bad conditions. — G. E. Partridge.

The Health Conditions of Workers in the Ceramic Industry and Especially of Porcelain-Workers. Zentralblatt für Gewerbe-Hygiene, 1915, 3. (Reviewed in Archiv für Sociale Hygiene und Demographie, June, 1917, 12, Nos. 1 and 2.) — Leymann does not agree with the previous conclusions of Sommerfield in regard to the relations of the processes of porcelain-making to tuberculosis among porcelain-workers. The paper discusses also the use of mortality records in estimating health hazards. — G. E. Partridge.

Social Hygiene. Offentliche Gesundheitspflege, 1916, 1, Nos. 9, 10, 11. — These numbers all contain installments of Dr. Alexander Elster's reports on current activities in the field of social hygiene, and include items on school hygiene, statistics, infection, insurance, etc., for the most part of local interest or relating to conditions during the war. There are brief sections dealing with industrial hygiene; most of the space, however, is occupied with a discussion of the daylight-saving plan, and its continuance after the war. Objections from the standpoint of the schools and of certain industries, and difficulties encountered during some seasons, are mentioned, and it is recommended that data be collected for a careful study of the whole question.

Dr. A. Fischer (No. 11) has given a brief history of social hygiene in which he explains the unusually high percentage of illness in Bavaria, especially as shown by insured women, as due to the extension of women's work in the last decade into occupations physically unsuitable for them, and to a greater extent than in other parts of Germany. Out of the war, the author hopes, better provisions for the protection of the health of the German people will issue, more complete control by laws, and a higher socialism in which health is regarded as a means of public service. — G. E. Partridge.

Wartime Gains for the American Family. *J. H. Tufts.* The International Journal of Ethics, Oct., 1919, 30, No. 1, 83–100. — We have made only beginnings of effective social work, for example, in meeting the conditions of poor housing, underfeeding and depressing surroundings. We have made only a beginning, also, in such important provisions as segregating feeble-minded women during the child-bearing age. Whether we can abolish poverty or not, we certainly have not half tried. We have not attended sufficiently to the factors that influence birth rate. While the war has shown us that we have neglected health in a wholly inexcusable manner, it has, however, put us on the right course. Standards of living, including wages, hours and housing, will change, and there are to be new standards of health, especially in regard to the health of children and to venereal diseases. A change of view has taken place toward a conception of production as a national enterprise and not exclusively as a means of private profit. The greatly increased employment of women in industrial pursuits presents many new problems. Certainly the indiscriminate extension in this direction is full of danger, and may be more destructive than war to the life and health of children and to the morale of the family life. — G. E. Partridge.

Architectural Effort and Chinese Nationalism: Being a Radical Interpretation of Modern Architecture as a Potent Factor in Civilization. *W. H. Chaund.* The Far Eastern Review, August, 1919, 15, No. 8, 533–537. — The author discusses the relation of architecture to national, civic and industrial life. Today the idea of the scientific and healthful city is spreading over the whole world. We must think ahead of our times, and although we must provide first for present needs, city-planning must be conceived in terms of the future. The work of the architect, especially as connected with civic activities, is as vitally related to public welfare as is law or medicine. Good architecture affords the sanitary foundation and environment required for hygienic and normal living. Although the article treats specifically the present conditions in China, it is of general interest, and touches upon some basic problems of hygiene from an unusual point of view. — G. E. Partridge.

The Interallied Congress of Hygiene in Paris. *V. H. Friedel.* Translated by L. A. Averill. The American Journal of School Hygiene, Sept., 1919, 3, No. 3, 61–65. — The war has served to place a new emphasis upon hygiene, and to take it out of the field of the academic. Physical and mental hygiene won the war. With the purpose of promoting the development of health the *Comité National de l'éducation physique et sportive et de l'hygiène sociale* has outlined a broad program. The first meeting was held recently at the Sorbonne. There were

thirteen sections, *viz.*, (1) sunshine and water; (2) sanitary homes; (3) rural hygiene; (4) city hygiene; (5) motherhood and infancy; (6) school hygiene; (7) physical education; (8) and (9) sanitary prophylaxis; (10) industrial hygiene; (11) post-school hygiene and moral prophylaxis; (12) hygiene of travel; (13) economic bearings of hygiene. — G. E. Partridge.

National Conference on Americanization in Industries. *C. S. Carney.* Jour. Applied Psychology, Sept., 1919, 3, No. 3, 269–276. — A report of a meeting held at Nantucket in June to discuss problems of education in industrial organizations. Compulsory attendance at English classes, although strongly supported by some, appeared on the whole to be opposed. The question whether employees should be paid for time spent in class attendance was raised and a census of industrial organizations showed eighteen plants holding classes during working hours, thirty-six holding classes after working hours, and six dividing the class period between employee's and employer's time. Four grades of requirements in regard to the teaching of English were recognized. — G. E. Partridge.

Fourth Industrial Safety Congress. Bull. N. Y. State Ind. Com., Oct., 1919, 5, No. 1, 10. — Announcement and detailed program of the Fourth Safety Congress which was held in Syracuse on Dec. 1, 2, 3, and 4, 1919. — L. A. Shaw.

Report of the American Federation of Labor Delegates to the International Federation of Trade Unions Congress at Amsterdam. American Federationist, Oct., 1919, 26, No. 10, 921–953. — Contains a report of "Committee 2" to the Congress, protesting against the clauses of the *Charter of Labor* as contained in the Versailles Peace Treaty. "Only a simple comparison of the clauses of the official Peace Treaty with the program adopted at Berne (February, 1919) by the international trades unions shows distinctly the insufficiency of this charter." The text of the treaty is not clear about the abolition of child labor, and it makes no mention of the age limit. It fails to limit Sunday work of women as was demanded. It does not regulate home industry or night work, and says nothing about prohibiting dangerous occupations to women or about the employment of women before and after confinement. It does not allude to the non-complete restriction of the labor hours in the unhealthy industries, or to the suppression of the use of poisons. It is unsatisfactory in regard to its clause about the eight-hour day. There is nothing about the sanitary inspection of home industry. The Sunday rest period of thirty-six hours is not provided for. The treaty does, however, guarantee a fair living wage, but it does not make any provision as to the realization of such living wage. No mention is made of unemployment and labor insurance. — G. E. Partridge.

Resolution by the American Federation of Labor Emphasizing the National Importance of Scientific Research. Am. Jour. Psychology, Oct., 1919, 30, No. 4, 433. —

"*Whereas*, scientific research and the technical application of results of research form a fundamental basis upon which the development of our industries, manufacturing, agriculture, mining, and others must rest; and

"*Whereas*, the productivity of industry is greatly increased by the technical application of the results of scientific research in physics, chemistry, biology, and geology, in engineering and agriculture, and in the related sciences; and the health and well-being not only of the workers, but of the whole population as well, are dependent upon advances in medicine and sanitation; so that the value of scientific advancement to the welfare of the nation is many times greater than the cost of the necessary research; and

"*Whereas*, the increased productivity of industry resulting from scientific research is a most potent factor in the ever increasing struggle of the workers to raise their standards of living, and the importance of this factor must steadily increase since there is a limit beyond which the average standard of living of the whole population cannot progress by the usual methods of re-adjustment, which limit can only be raised by research and the utilization of the results of research in industry; and

"*Whereas*, there are numerous important and pressing problems of administration and regulation now faced by federal, state, and local governments, the wise solution of which depends upon scientific and technical research; and

"*Whereas*, the war has brought home to all the nations engaged in it the overwhelming importance of science and technology to national welfare, whether in war or in peace, and not only is private initiative attempting to organize far-reaching research in these fields on a national scale, but in several countries governmental participation and support of such undertakings are already active; therefore be it

"*Resolved*, by the American Federation of Labor in convention assembled, that a broad program of scientific and technical research is of major importance to the national welfare and should be fostered in every way by the federal government, and that the activities of the government itself in such research should be adequately and generously supported in order that the work may be greatly strengthened and extended; and the Secretary of the Federation is instructed to transmit copies of this resolution to the President of the United States, to the President *pro tempore* of the Senate, and to the Speaker of the House of Representatives." — G. E. Partridge.

SYSTEMIC OCCUPATIONAL DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

What we Know About Cancer. A Handbook for the Medical Profession. Prepared by a Special Committee of the American Society for the Control of Cancer and Published in Co-operation with the Council on Health and Public Instruction of the American Medical Association. Publications of the American Society for the Control of Cancer, New York, Bull. 14, July, 1919. — This is a 54-page pamphlet which gives in condensed summary form the essence of the best modern knowledge concerning the diagnosis and treatment of the principal forms of malignant disease. The general facts concerning cancer are outlined and then each important type and site of cancer is taken up in detail and the forms, symptoms, standard treatment, and results to be expected are outlined for each type.

The pamphlet may be ordered either from the American Medical Association, 535 North Dearborn Street, Chicago, or from the American Society for the Control of Cancer, 25 West 45th Street, New York City. — K. R. Drinker.

CENTRAL NERVOUS SYSTEM

The New Moron. *C. T. Jones.* The Training School Bulletin, Sept., 1919, 16, No. 5, 76–79. — Many men were found during the army examinations who, according to psychological standards, should be classified as mentally defective, and yet who were able to meet the social requirements of the community in which they had lived. Thousands of men were given a rating of 9 years who seemed to get along and make a good living. The courts, on the other hand, are finding many who test normal, but who, socially judged, are sub-normal. The result is a tendency to shift from the psychological to the sociological criterion. Psychological tests have attempted to measure more or less exactly the extent of cerebral development, and from this to draw conclusions as to what may be expected in the way of social adaptation. This succeeds only with the pronounced cases. Temperament and environment must be not be lost sight of in considering the determining factors. — G. E. Partridge.

Nervous and Mental Diseases in the War. *John F. W. Meagher.* Jour. Nerv. and Ment. Dis., Oct., 1919, 50, No. 4, 331–337. — Meagher analyzes the results of examining 24,400 soldiers at Kelly Field who were given a routine nervous and mental examination, and compares these with the figures obtained from examining 30,000 soldiers at Camp Travis where the cases to be examined by the neuro-psychiatrists were referred by the regimental officers. The advantage of a routine examination was shown by the fact that at Kelly Field 28 cases of syphilis of the central nervous system were found as against 1 at Camp Travis. Also, 106 mentally subnormal individuals were found in the routine and only 40 where the referred cases alone were examined. Other figures that are of interest show that at Camp Travis 43 psycho-neuroses were found as against 92 at Kelly Field, 57 psychoses as against 42, and 62 epilepsies as against 39 respectively at these camps. — S. Cobb.

The Capacity for Military Service of the Psychically Abnormal. *H. Steizner.* Archiv für Psychiatrie und Nervenkrankheiten, 1916, 56, No. 3, 881–898. — The article is a general discussion, with the presentation of some clinical data, of the types of the mentally abnormal that were found in the German military service, but it has a more inclusive significance as a study of the relations of mental condition to occupation. The writer points out that the World War, far more than any previous war, has brought to the front latent mental conditions. There is a consensus of conclusion to the effect that the war has not produced new diseases of the mind, but has developed latencies. Several types demand practical consideration. Certain cases of organic troubles already determined in their ultimate outcome were merely accelerated by service. There is the neuropathic or psychopathic group, liable to permanent injury if ill-assigned to duties; then, the high-strung, the over-intellectual and highly cultivated, who are always at a disadvantage in some respect in military service; and, finally, the weak-minded in various degrees. The investigations of Wilmans are referred to as evidence that a certain degree of feeblemindedness does not prevent men from becoming good soldiers, and that the worst cases of breach of discipline, etc., are to be found among those having incipient or actual psychoses rather than among the feeble-minded. The cases reported are of interest mainly from the standpoint of the psychology of war. The important conclusion is that the uncomplicated feeble-minded showed themselves surprisingly enduring of the hardships of war, while the neuropathic and psychopathic were badly affected. — G. E. Partridge.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

Chronic Saturnism, Ulcus Venticuli and the Vegetative Nervous System. *A. Schiff.* Wien. klin. Wchnschr., April 10, 1919, 32, No. 15, 387. — The classical type of lead colic — spastic irritation of the nerves, vessels and musculature of the intestinal and urinary systems — is by no means the most common to be found in usual clinical practice. The greater number of chronic lead poisoning cases suffer from colic of a different sort, consisting of protracted chronic pains instead of single fulminating attacks at long intervals. Of forty-eight such cases studied, fourteen were definitely diagnosed as pyloric ulcer,

and twenty-six gave symptoms of severe gastralgia with marked hyperacidity or hypersecretion. Ten of the latter group showed the typical clinical picture of duodenal ulcer. The majority of all these cases had previously been incorrectly diagnosed as lead colic. Hyperacidity was found in 53 per cent. of these as compared with 29 per cent. in the usual run of patients with digestive complaints. This common occurrence of ulceration appears not to have been hitherto noted. Lead poisoning brings about an intensive secretory irritation in the stomach with consequent ulcer formation. On the basis of these findings, there follows a discussion of the genesis of ulceration in the alimentary tract. — B. Cohen.

Lead Poisoning in Waterfowl. *Alexander Wetmore.* Abstracted from Bureau Biol. Survey, U. S. Dept. Agr., Bull. 793, 1919, 1–12, by W. H. Ross in Chem. Abstr., Oct. 20, 1919, 13, No. 20, 2560. — "Lead poisoning in various species of wild ducks and other waterfowl is shown to have its origin in the large quantity of expended shot that accumulates from year to year at various shooting points, and which are found and swallowed by the birds while searching for food. The stomachs of 28 mallards and 10 pintails that had died from Pb poisoning were found to contain a total of 939 shot, or an av. of almost 25 each. Mallards that had been captured young and reared to maturity when given Pb shot exhibited the same symptoms and post-mortem appearance as those which died from Pb poisoning in the wild state, and 6 pillets of No. 6 shot constituted amt. of Pb that was always fatal. Treatment with $MgSO_4$ led to recovery in about 50 per cent. of the cases to which this was administered but no suggestions of a practical nature are advanced to alleviate the danger of poisoning our waterfowl." — W. O. Fenn.

A Method for the Determination of Minute Amounts of Lead in Urine, Feces, and Tissue. *W. Denis* and *A. S. Minot.* Jour. Biol. Chem., July, 1919, 38, No. 3, 449–453. — An electrolytic method for the quantitative determination of lead in urine, feces and tissue is described. The lead is deposited on the anode as dioxide which is dissolved in potassium iodide and acetic acid, and the iodine set free is titrated against sodium thiosulphate. As little as 0.1 mg. can be detected qualitatively and 0.4 mg. or more determined quantitatively with an error not exceeding 5 per cent. — A. S. Minot.

Benzine Poisoning, with Report of a Chronic Case. *Russell L. Haden.* Bull. Johns Hopkins Hosp., Oct., 1919, 30, No. 344, 309–310. — Haden reviews the chemistry of benzine and the clinical and experimental literature on benzine poisoning. A number of acute cases have been reported. These have been characterized chiefly by cyanosis, miosis, weak pulse, gastro-intestinal symptoms, muscular twitchings, spasticity, unconsciousness and convulsions. Only four instances of chronic poisoning have been recorded previously. These all occurred in a rubber factory.

The case reported by Haden was that of a man of 42 who cleaned the printer's rolls in a lithographing factory by scrubbing them in a trough of benzine from which about 2 gallons evaporated daily. Two months after beginning the work he developed generalized abdominal pains with nausea and vomiting after meals, associated with a feeling of compression in his head. Other symptoms developing during the following few months were weakness and heaviness of the arms and legs, shooting pains, paresthesias, dizziness, drowsiness, mental slowing, tremor of the fingers and eyelids, dimness of vision, anorexia, constipation and finally jaundice.

Examination showed mental dulness, cyanosis, jaundice, palpable liver and spleen, and increased tendon reflexes. There was a slight anemia.

Recovery was prompt and apparently complete. — H. F. West.

Experimental Trinitrotoluene Poisoning. *R. Kramer* and *H. Meierhof.* Abstracted from Proc. Soc. Exp. Biol. Med., 1918, 15, 134–135, by V. C. Myers in Chem. Abstr., Nov. 10, 1919, 13, No. 21, 2709. — "In an attempt to produce experimentally in dogs a state of poisoning by trinitrotoluene analogous to the conditions observed among munition workers, the following methods of administering the poison were employed: (1) Feeding by mouth (TNT in butter); (2) skin inunction (TNT in lard); (3) subcutaneous injections (TNT in olive oil); (4) intravenous injections (TNT in acetone); (5) intraperitoneal injections (TNT in albolene). Only the first 3 methods proved satisfactory. Symptoms observed: (1) vomiting, seen only in feeding cases, apparently due to direct irritation of the stomach by the poison; (2) diarrhea, frequently present (its occurrence is not related to any particular method of administration); (3) depression, surliness, weakness, and emaciation, very marked in later stages; (4) leucocytosis. The outstanding feature of the autopsy findings was the absence of any lesions which would explain the death of the animal."— W. O. Fenn.

Cyanide Poisoning and its Treatment. *H. Fühner.* Deutsch. med. Wchnschr., July 31, 1919, 45, No. 31, 847–850. — Hydrocyanic acid vapor has been used extensively in Germany recently to combat the plague of vermin that has arisen since the war. Previously, cyanide poisoning occurred only from ingestion of the alkaline salts, in gold refining and other industrial arts. Acute poisoning is marked by salivation, metallic taste in the mouth, petechiae on the tongue, and reddening of the forehead. There is a feeling of pressure and pain in the chest, general malaise and vomiting. Weakness and insensibility may be followed by a sharp fall in blood pressure, and death. Repeated small doses are not known to produce any chronic form of poisoning, but may cause an increased susceptibility. A long exposure to a minute amount of the gas, as in a room insufficiently aired after disinfection, may bring on symptoms.

Destruction of the poison in the body seems to be brought about by its conversion into thiocyanic acid

(HCNS) or its salts. The author recommends the subcutaneous injection of large quantities of 5 per cent. sodium thiosulphate to aid this process, and adduces experimental evidence of the value of such a procedure, especially in cases of poisoning by the vapor. Where cyanides have been taken by mouth, he recommends washing out the stomach with a 1 per cent. permanganate solution, and the administration of alkalies. Epinephrin may be given if the heart is weak. Several other drugs which have been recommended from time to time, such as hydrogen peroxide, atropin, caffein, strychnin, and various narcotics, he believes to be valueless. — T. J. Putnam.

The Effects of Chlorine upon Isolated Bronchi and Pulmonary Vessels. *H. G. Barbour* and *H. W. Williams*. Jour. Pharmacol. and Exper. Therap., Sept., 1919, 14, No. 1, 47–53. — Although low concentrations of chlorine in Locke's solution causes dilation of venous, arterial and bronchial muscles, stronger concentrations cause constriction. — Worth Hale.

Drugs After Chlorine Gassing. I. The Influence of Morphine Upon the Fatality of Chlorine Poisoning. *H. G. Barbour, A. M. Hjort,* and *F. A. Taylor*. Jour. Pharmacol. and Exper. Therap., Sept., 1919, 14, No. 1, 55–59. — Morphine probably exerts an unfavorable influence upon chlorine-gassed dogs, if the dose is at all large, but in smaller, analgesic doses it does not seem to act deleteriously. — Worth Hale.

Drugs After Chlorine Gassing. II. Observations Upon the Treatment of Gassed Dogs with Circulatory Stimulants. *H. G. Barbour*. Jour. Pharmacol. and Exper. Therap., Sept., 1919, 14, No. 1, 61–64. — It is improbable that either epinephrin or ouabain can be made to exert a favorable influence upon chlorine-poisoned dogs. — Worth Hale.

The Pharmacology of Arsine. *George Joachimoglu*. Arch. f. exper. Path. u. Pharmakol., June, 1919, 85, Nos. 1–2, 32–60. — The author determined the toxicity of arsine for rabbits. He found that 0.38–0.94 mg. per liter of air, when breathed for one hour, caused illness and when breathed for from twelve to forty hours, death. After 0.16–0.30 mg. per liter of air per hour, hemoglobinuria appeared and continued several days. A greater concentration was found in the blood and the blood cells than in the lungs or liver.

The hemolytic concentration for various bloods was determined with results as follows: Human, 1–217,800; Rabbit, 1–500,000; Cat, 1–224,000; G. Pig, 1–268,400; Sheep, 1–268,400. — Worth Hale.

Studies in Uranium Poisoning. II. The Solubility of Uranium Oxide in Artificial and Human Gastric Juice. *H. T. Karsner, S. P. Reimann* and *S. C. Brooks*. Abstracted from Jour. Med. Res., 1918, 39, 163–168, by G. T. Caldwell in Chem. Abstr., Sept. 10, 1919, 13, No. 17, 2083. — "Uranium oxide although insoluble in water is soluble in gastric juice. Sugar, fat, and peptone (albumose) do not materially alter the solubility, while milk and casein reduce it. III. The Question of Renal Tissue Affinity for Uranium. *Ibid.*, 169–175. — The excretion of U is chiefly by way of the kidneys. The severity of the functional and anatomical lesion of the kidney, in U poisoning, is probably due to the concn. of the metal in this organ as the result of the attempts at excretion. There is no demonstrable tissue affinity of kidney for U. IV. The Relation of Acid Intoxication to Nephritis. *Ibid.*, 177–187. — Acid intoxication is a practically const. concomitant of U poisoning as ordinarily produced in animals, and is more severe in older than in younger animals. Because of the fact that acid intoxication appears subsequently to, often simultaneously with, but never earlier than albuminuria, it is concluded that the renal irritation of the early stage of U nephritis is not the result of the acid intoxication."— W. O. Fenn.

DUST HAZARDS AND THEIR EFFECTS

Second Preliminary Report of Committee on Mortality from Tuberculosis in Dusty Trades. National Tuberculosis Association, New York City, Sept., 1919. — This report consists of a series of letters between members of the Association regarding the activities of the Vermont Association for the Prevention of Tuberculosis and the Niagara County Joint Committee for the Prevention of Tuberculosis. An outline of a suggested plan of work for Niagara County is given. In closing, a series of statistical tables bearing on tuberculosis mortality in the stone-cutting trades in Vermont is cited. — L. Greenburg.

Cement Inhalation and Its Effect Upon Tuberculous Lungs. *S. Nagai*. Abstracted from Tokyo Igakukai Zasshi, 1918, 32, No. 13, 2–37, and Jap. Med. Literature, 1919, 4, 33, by J. S. Hepburn in Chem. Abstr., Sept. 10, 1919, 13, No. 17, 2084. — "Tuberculosis is uncommon among workers about lime kilns. Guinea pigs were kept in an atm. in which either lime dust or lime dust plus tubercle bacilli were kept in suspension by mech. agitation. The lime dust alone had no detrimental effect upon the lung tissues. The lime dust did not exert any demonstrable beneficial action upon tuberculosis whether that disease was produced by exposure to lime dust plus bacilli, or had its origin previous to such exposure." — W. O. Fenn.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

First Report of the Special Investigation Committee Upon the Incidence of Phthisis in Relation to Occupations: The Boot and Shoe Industry. Medical Research Committee. Special Report Series No. 1, London, 1915. — This pamphlet is devoted to the consideration of the industrial mortality statistics of the Registrar General's Decennial Supplement and also the records of the National Union of Boot and Shoe Operatives, with the purpose in mind of throwing some light on reasons for the high mortality among boot and shoe makers. The process of making shoes is described and the hygienic conditions of the factories in this industry are also discussed. The conclusions arrived at are:

1. Phthisis is specially prevalent among workers in the boot and shoe industry, as compared with the general population.

2. The individual worker is predisposed to infection by the sedentary nature of his employment, and possibly by the attitude he adopts at work.

3. The infection is probably (*a*) increased by the number of infected workers, and (*b*) favored by want of light, the presence of infected dust, and inadequate ventilation in the workrooms. — L. Greenburg.

An Inquiry into the Prevalence and Aetiology of Tuberculosis Among Industrial Workers with Special Reference to Female Munition Workers. Medical Research Committee. Special Report Series, No. 22, London, 1919. — The purpose of this investigation was to attempt to account for the fact that the death rate from tuberculosis, which prior to the war had been declining, was found towards the end of 1917 to be on the increase. It was obvious very early that changes in the male death rate would be of no significance, owing to military selection, etc. The data with regard to women would, of course, not be met with this objection, and it was early suggested that the rise in mortality might be due to the entrance of women into industrial life.

The report consists of five parts as follows:

Part I deals with occupational tuberculosis as revealed by the statistics of male operatives, the principal data utilized being from the Registrar General's Decennial Supplement, including the unpublished data for 1910–1912, for the use of which we are indebted to the courtesy of Dr. Stevenson. In this part an attempt has been made to deal with the factor of selection.

Part II is concerned with the occupational morbidity and mortality of women. Owing to lack of trustworthy data, this section is incomplete.

Part III examines the regional distribution of mortality in England and Wales during 1911.

Part IV examines the wartime statistics of England and Wales.

Part V is a general account by Dr. Tebb of factory conditions as observed in Birmingham in 1917.

One portion of the study of especial interest is that in Part IV discussing the value of the ratio of tuberculosis to total deaths. The conclusions arrived at are:

1. The incidence of pulmonary tuberculosis in particular occupations is greater than can be accounted for by the hypothesis that persons employed in such trades are, *ab initio*, of inferior physique and with a low general resistance to disease-producing causes.

2. The general statistics of employed women are insufficient to furnish a ground for exact reasoning as to variations of liability to contract tuberculosis.

3. The incidence of tuberculosis among the inhabitants of towns is greater than can be accounted for by the general lowering of health associated with the home environment of the urban poor, and is consistent with the view that industrial employment introduces a special factor which makes for the development of tuberculosis.

4. The ratio of phthisis deaths to deaths from other causes in age-groups is substantially correlated with the age death rate from phthisis, and a tolerably exact impression of the level of phthisis mortality in a group of districts can be derived from the proportionate mortality index. In individual districts, however, the divergence may be considerable between the observed death rate and that predicted from a knowledge of the proportionate mortality.

5. In the majority of English registration districts the proportionate phthisis mortality at the ages 15 to 45 has increased since the outbreak of war.

6. The position of the maximum in the curve of proportionate mortality (women) is different, and has varied in a different way since the war, in towns of different kinds. This is manifested in the nearly uniform increase of the proportionate mortality (phthisis) at the ages 15 to 20 in the great industrial towns, another result tending to suggest that the wartime increase of phthisis mortality is due to industrialization.

7. A field investigation in the Birmingham area discloses evidence (*a*) of a relatively greater incidence of phthisis among the employees in hygienically unsuitable factories, (*b*) of a serious condition of overcrowding in industrial dwellings, but (*c*) no evidence of any specific trade habit amongst munition workers specially apt to favor the conveyance of phthisis from person to person. — L. Greenburg.

The Employment of Rest and Exercise After Tuberculous Patients Have Returned to Work. *Hugh M. Kinghorn.* Am. Rev. Tuberc., Oct., 1919, 3, No. 8, 483–490. — Kinghorn emphasizes especially the need for after-care and supervision of patients who have been discharged from sanitaria. Especially dangerous from the standpoint of relapse is the return to heavy muscular work and strenuous exercise. The author advises sedentary or light

work, short working hours, much rest and much time spent in the open air for several months after discharge. Office work under good conditions is preferable to heavy physical labor in the open air. All patients should continue the open-air cure in their homes. Individuals who are forced to return to manual labor should have a more prolonged sanitarium treatment. — H. F. West.

Venereal Disease: A National Problem. *William Edler.* Quart. Bull. Louisiana State Board of Health, Sept., 1919, 10, No. 3, 129–132. — An address made before the Orleans Medical Society. Notwithstanding the fact that physicians are in a position to realize the ravages of venereal disease better than the general public, they are inclined to drift along in complacency with the general sentiment that somehow the ugly problem will solve itself. The atmosphere of secrecy that beclouds this disease makes it particularly insidious. Venereal diseases must be included in the same class with all other infectious diseases. The physician must overcome his repugnance to venereally diseased persons.

The next problem for physicians is to gain some organized notion as to the control of the source of infection. Prostitution must be annihilated, not simply restricted. The prostitute must then be isolated and made non-infectious. There must be a thorough system of prophylaxis as applied to the individual. Violation of the laws aimed to prohibit self-treatment must be reported. — L. A. Shaw.

Co-operation of Dentists in Venereal Disease Control. U. S. Pub. Health Ser., Pub. Health Rep., Oct. 24, 1919, 34, No. 43, 2388–2391. — A circular letter has been sent to every dentist in the United States, requesting him to sign and return an enclosed pledge card, and stating that (1) it is necessary to call the attention of the dental profession to the spread of syphilitic infection resulting from dental operations; (2) the dental profession should hold itself responsible for the detection of syphilis which manifests itself through oral lesions; and (3) the co-operation of the dental profession is, therefore, solicited by the Public Health Service in its campaign to check the spread of venereal infection. — L. A. Shaw.

Value of Venereal Disease Case Reports. Weekly Bull., N. Y. City Dept. Health, Nov. 15, 1919, 8, No. 46, 363–365. — Quotations from the U. S. Public Health Reports relating to the current system for reporting venereal infections and to the available means of perfecting this system, with special reference to the duty of physicians in this respect. — L. A. Shaw.

Venereal Disease in Relation to Measures for Child Welfare. *Victoria E. M. Bennett.* The Child, Sept., 1919, 9, No. 12, 529–534. — This article emphasizes the curability of venereal diseases and the need of widespread information about the consequences of neglect, the proper course to be taken in seeking treatment, etc. — G. E. Partridge.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

Defense Against Dangerous Articles. *B. W. Dunn.* Abstracted from B. E. Accident Bull., 1919, No. 44, by Charles E. Munroe in Chem. Abstr., Sept. 10, 1919, 13, No. 17, 2129. — "Two recurrent fires in a car transporting $NaNO_3$ in jute bags are described and the imperative necessity of shipping in tight box cars is shown. In a circular designed to enlist the co-operation of shippers of gasoline and owners, lessees and builders of tank cars, it is stated that gasoline is the most destructive article now handled by railroads. The loss and damage to life and property due to its transportation in 1918 exceeded many times that due to the unusually large vol. of explosives required to meet war conditions. The average tank car as now used has defects that cause leakage, and many shippers violate federal law and I. C. C. regulations in preparing and loading them. Condensed comments on accidents cite, among others, one death from handling improperly cleaned machinery from an explosives plant, another due to shipper's failure properly to secure the bung of a supposedly 'empty' drum, which formerly contained carbolic acid (cresol), while supposedly 'empty' carbide cans loaded with rubbish by railroad employees resulted in a fire. Eight instructive tables relating to fires and explosions during 1919 are given and also several pages of detailed descriptions of each of the more important recent accidents. Among these was an explosion of a case of toy torpedoes while it was being loaded in a car, through driving a nail into the box when 'staying' it in place." — W. O. Fenn.

INDUSTRIAL SURGERY

Disability Following Injuries to the Back in Industrial Accidents. *James Warren Sever.* Jour. Orthop. Surg., Nov., 1919, 1, No. 11, 657–666. — Records of 134 cases show that unusually long periods of disability prevail after injuries to the back, and that the medical treatment and supervision have not been of the best. These cases were seen by the author as an impartial examiner for the Industrial Accident Board of Massachusetts. Taken as a group, the medical profession has fallen down badly on these cases. More careful and adequate physical examination is absolutely necessary in order to gain more comprehensive treatment. — C. C. Lund.

FATIGUE AND OCCUPATIONAL NEUROSES

WORK-CURVES. *T. R. Garth.* Jour. Educational Psychology, May–June, 1919, 10, Nos. 5 and 6, 277–283. — This is a study of the form of the work-curve, made by the computation method, the subjects being about 700 children. The technique of the experiments, which were performed originally with reference to another aspect of the problem of fatigue, is given somewhat briefly, but the conclusion is reached " that the question as to whether there are types of work-curves in the same sort of work, as in addition of one-place figures, may be answered by the generalization that there are no such things as many types in measurements of any one kind of human process or trait, and that there is only one type. This is a brief statement of the single-type theory. . . . . If the single-type theory is true, then there are no such things as types of work-curves, and Meumann and Kraepelin are wrong." — G. E. Partridge.

INVESTIGATIONS IN INDUSTRIAL HYGIENE. *W. Weichardt.* Offentliche Gesundheitspflege, 1916, 1, No. 2, 65–82. — This is an experimental study of fatigue by the plethysmographic method of E. Weber. Weber found that in normal unfatigued subjects an increase in the volume of the part studied — an increase, due to central innervation of blood vessels — follows upon increased psychic or physical effort. With the onset of fatigue lessened volume is found. The method is especially practicable, because the phenomenon in question can be measured in parts of the body which do not participate in the movements. Weichardt has made extensive use of Weber's technique and he shows sixteen tracings of plethysmographic and respiration curves in the course of work, the blood curves being taken in the arm and the movement usually being strong flexion of the foot. Weber's phenomenon was found uniformly. Curves taken upon already fatigued subjects showed a tendency to be negative from the beginning. The afternoon curves in general were relatively of this character, but in some strong subjects no difference in morning and afternoon curves could be found. Curves made by schoolchildren indicate individual differences and variable reactions according to previous fatigue, etc. Weichardt considers, also, biochemical aspects of the fatigue problem, and an analysis of fatigue and a tabulation of its factors are offered. There is reference to the writer's experiments of 1907 with acetone extracts as binders of fatigue products, and some curves are presented showing the effects of his " retardine " in eliminating the negative reaction. There is a brief résumé accompanied by a discussion of the methods of studying fatigue and by comments on the practical importance of the subject with reference to the war. — G. E. Partridge.

INDUSTRIAL FATIGUE IN TIN-PLATE MANUFACTURE. Engin., Oct. 10, 1919, 108, No. 2806, 484–485. — Two years ago the British Home Secretary invited the Department of Scientific and Industrial Research to appoint a committee to consider and investigate the relations of the hours of labor and other conditions of employment, including methods of work, to the production of fatigue, having regard both to industrial efficiency and to the preservation of health among the workers. Such a committee was appointed and its first fruits are embodied in a report on the operations connected with the manufacture of tin-plate in South Wales, by H. M. Vernon, M.D., investigator to the board.

The work of the mill men is very severe, both on account of the physical exertion required and the high temperature in which the men have to work. In several operations a weight of from 40 pounds to 80 pounds has to be lifted by means of long tongs. The temperature of the air in which the men are working has been observed as high as 110° F., but this figure, Dr. Vernon states, gives but an inadequate idea of the heat experienced. Up to the beginning of 1919 the men worked five or six 8-hour shifts per week and now it is suggested that the length of shifts should be reduced to six hours. It is evidently desirable to know what effect such prolonged strain would have on output, and the investigator has collected and discussed information from five typical factories in which conditions of labor, especially ventilation, vary considerably. The conditions for a direct answer appeared excellent, because on emergency, as the breakdown of a mill or temporary shortness of material, the custom of the trade is to convert the three 8-hour shifts into four 6-hour shifts or even six 4-hour shifts in order to distribute the work as fairly as possible among operatives. The conclusion drawn from standardized figures shows that the output of the 4-hour shift arrangement is in excess of that of the normal 8-hour shift by 11.5 per cent.

The author suggests that workers need time to accommodate themselves to new working conditions. A steady level of production is only obtained after the worker perceives that he can speed up his rate of working without incurring over-fatigue. In one factory the mean hour output in all the 6-hour shifts was 8.5 per cent. greater than in 8-hour shifts, but owing to time required for adaptation this figure is probably low, the real measure of improvement being more nearly 10 per cent. Some interesting results are presented concerning the output in the successive hours of the shift, and concerning the length of the rest pauses at the different stages of the work. The results show that the number of minutes spent in recuperation is, in the mean, 12.5 in 8-hour shifts, and 10.2 in 6-hour shifts. The output per hour is fairly uniform. Taking the average production for the whole eight hours as 800, the actual output varied from 77 to 121, but half of the output values lie between 94 and 105. In the 6-hour shift the output is distinctly more uniform. The extremes range from 90 to 110 and the mean values from 96 to 105.

The initial output is above the average, followed by a gradual decline, but in the final hours, especially in the penultimate, there is a noticeable increase. It is claimed that the output varies inversely as the temperature. This claim is based upon a table of the weekly output for six years from one factory. It appears that the average mean percentage of plates produced was 3 per cent. to 4 per cent. above the average from January to March, and then fell gradually to a minimum in August, when it was 4 per cent. below the average. Thence the amount rose again to 2 per cent. above the average. In conclusion Dr. Vernon offers some excellent suggestions calculated to improve the apparatus and to facilitate factory arrangements. — G. M. Fair.

NUTRITION AND METABOLISM

Food Requirements of a Normal Working-Class Family. *Henry Thompson.* Abstracted from Science Progress, 1918, Vol. 13, 79–85, by J. S. Hepburn in Chem. Abstr., Aug. 10, 1919, 13, No. 15, 1722. — "The daily food requirement in large cal., is given as 3400 for the father, 2750 for the mother, 3000 for a boy of 13 yrs. and 2400, 2000, and 1750 for a boy or girl of 11, 9, and 7 yrs. resp. Various British dietaries are described. Bread plus meat provide 55% of the total energy in working-class diets, and 60% of the total energy in the food supplied to the country as a whole." — W. O. Fenn.

Energy Expenditure and Food Requirements of Women Workers. *O. Rosenheim.* Abstracted from Proc. Roy. Soc., 1919, 91B, 44–61, by J. S. Hepburn in Chem. Abstr., Oct. 20, 1919, 13, No. 20, 2550. — "The total food requirement for 24 hrs. was calc. as the sum of the calories required for: 8 hrs. sleep (standard metabolism), 2 hrs. at hard work, 6 hrs. divided equally between light work and medium hard work, 1.5 hrs. walking, 3.5 hrs. sitting, and 3 hrs. standing. This sum was increased by 15% to obtain the gross daily caloric requirement, which was found to be 2400 to 2800 cals. per person." The energy expenditure while working was determined by observations on women working in the manufacture of aëroplane parts. The method was that of indirect calorimetry, using the Douglas bag. — W. O. Fenn.

Efficiency of Oat Protein in Adult Human Nutrition. *H. C. Sherman, J. C. Winters,* and *V. Phillips.* Jour. Biol. Chem., Aug., 1919, 39, No. 1, 53–63. — An experiment is described in which two women for periods of sixteen and twenty-eight days respectively ate diets consisting entirely of oatmeal, cornstarch, apple, butter, sugar, milk and distilled water in such proportion that 85–87 per cent. of the protein was furnished by the oatmeal. Nitrogen equilibrium and body weight were maintained. In a preliminary period in which the milk was withdrawn from the diet, there was a negative nitrogen balance. The conclusion is drawn that for practical dietetics oat protein with a small amount of milk is as efficient as proteins of a mixed diet in maintaining the metabolism of man. — A. S. Minot.

A Peculiar Starvation Disease. *O. Porges* and *R. Wagner.* Wien. klin. Wchnschr., April 10, 1919, 32, No. 15, 385. — An affection of the bones in middle-aged women is described that does not fully coincide in symptoms with any of the known bone diseases. The cardinal symptom, ostealgia without deformations, suggests senile osteoporosis. The disease appears to be due to chronic underfeeding (as a result of war diets), particularly through nitrogen losses of the body leading to nitrogen loss from the bones with consequent degeneration. — B. Cohen.

Dependence of the Protein Requirement on the Mineral Metabolism. *C. Rose* and *Ragnar Berg.* Abstracted from München. med. Wchnschr., 1918, 65, 1011–1016, by J. S. Hepburn in Chem. Abstr., June 10, 1919, 13, No. 11, 1222. — "The protein requirement is at a minimum if the experimental ration contains a sufficient excess of bases during both the fore-period and the experiment proper." If the supply of inorganic bases in the body is deficient, NH_3 is formed in the body and used to neutralize the excess acid. An insufficient excess of bases may increase the protein requirement by from 5 to even 300 per cent., depending upon the conditions of the experiment. "A man of 70 kg. body weight engaged on moderately heavy work requires an excess of 25 mg. equivalents of inorganic bases daily. On a diet rich in acid-forming elements, the energy-utilization is less than on a diet rich in base-forming elements; the energy requirement, therefore, is greater on the former diet than on the latter." — W. O. Fenn.

The Deficiency Theory of the Origin of Beri-Beri in the Light of Clinical and Experimental Observations on the Disease, with an Account of a Series of Forty Cases. *F. M. R. Walshe.* Abstracted from Quart. Jour. Med., 1918, 11, 320–338, by John T. Myers in Chem. Abstr., May 20, 1919, 13, No. 10, 1089. — Deficiency in vitamines is found to be an inadequate cause of beri-beri. A probable second factor is the presence of carbohydrates undergoing an aberrant hydrolysis in the absence of their specific vitamine with the production of toxic by- and end-products. Viewed in this light the disease is an intoxication. Support for this theory is found in clinical observations and in the fact that fowls do not develop the disease when starved, their diet then being deficient in both vitamines and carbohydrates. — W. O. Fenn.

Metabolism of Female Munitions Workers. *M. Greenwood, C. Hodson* and *A. E. Tebb.* Abstracted from Proc. Roy. Soc., 1919, 91B, 62–82, by

J. S. Hepburn in Chem. Abstr., Oct. 20, 1919, 13, No. 20, 2550. — "By means of the Douglas bag determination was made of the energy requirement of women workers engaged in the manufacture of 6-inch shell cases. The subjects fell into 4 groups according to their approx. requirement in cal. per hr. per m^2 of body surface: I. 100 cal. light turning, turning, forging. II. 125 cal. tool setting, heavy turning, stamping, finishing Cu bands, shell hoisting. III. 160 cal. gauging, walking, and carrying. IV. 180 cal. laboring, cleaning, and drying. Assuming a body surface of 1.6 m^2 and a working day of 7 hrs., and making due allowance for the caloric requirements of the body during the remainder of the day, the daily net energy requirement for these groups was found to be 2530, 2810, 3200, and 3425 cal., resp. Adding an allowance of 10 %, the daily food requirement became 2810, 3120, 2555, and 3805 cal., resp." — W. O. Fenn.

WOMEN AND CHILDREN IN INDUSTRY

Employment and Substitution of Women During the War. The Women's Industrial News, April, 1919, 22, No. 83, 8–10. — Reports of the Board of Trade and of the Home Office show that by far fewer women than was commonly supposed were added to the industrial class during the war, and that illusion in this respect was caused by the transfer of women from one industry to another. The total number of new workers is about 1,200,000 (in Great Britain as a whole). It is brought out that very few women have taken the places of men as managers, and the reason given is that, at the outbreak of the war, there was no supply of trained women ready to take such posts. In steam laundries, in clothing factories and wherever women were organized in large numbers apart from men, there was a gradual increase in the employment of women in supervisional work. One great advance in the problem of industrial work for women has come with the discovery that, with proper conditions and appliances, many kinds of work hitherto supposed to be unsuitable for women can be performed by them without detrimental effects. In the case of skilled processes, also, there has been a considerable extension of women's work. Very few women can be described as skilled in the strict sense of the engineering trades, which implies ability to put in hand and carry out any given job, on a particular class of work, from drawings only. In many cases, on the other hand, women became skilled in the performance of a few specialized processes. Simultaneous improvement in conditions of work, machinery, tools, labor-saving devices and organization has greatly aided in the development of all labor. The efficiency of women's work as compared with men's, or its "replacement value," is hard to determine. In the semi-skilled operations, where the fairest test can be made, women's work appears to equal men's, and in many cases was preferred by the manufacturer. The whole result is that there is a larger field opened to women because of the war; and the present need of increased production and the fact that so many men are disabled indicate increased permanent employment of women in industry. It is more than ever necessary, therefore, to make the position of women in industry more definite and more regular. Already there is a great increase in the number of women's organizations and in the number of men's organizations that have opened their doors to women. — G. E. Partridge.

Equal Pay for Equal Work. *Dorothea M. Barton.* The Women's Industrial News, Jan., 1919, 21, No. 82, 6–16. — The ultimate aim must be to secure one standard of wages for men and women. Equal opportunities for gaining skill and experience must be granted, with the honest intention to pave the way toward this end. Several conditions and prejudices must be met before the industrial life of women can be greatly improved. Women's individualistic tendencies, their lower standards of requirement in matters of health and recreation, their lack of self-respect as workers, their lack of interest in organization, their uncertain future as industrial workers, and the tendency to make occupation a temporary expedient and to resort to work to gain pocket-money complicate the problems of women in industry. Increased attention must be given to all these factors and to the health of girls and women. Factory arrangements must be devised to meet the needs of individuals who work under them. Relief must be brought to the overburdened housewife. Serious consideration must be given to the whole question of providing for the nation's children, with particular attention to the effect on the status and wages of women. — G. E. Partridge.

A Report on the Causes of Wastage of Labor in Munition Factories Employing Women. Medical Research Committee. Special Report Series No. 16, 1918. — This valuable study had for its primary object the ascertainment of the actual extent of industrial wastage among women employed in munition factories, and consisted in the analysis of the statistics of eighteen factories employing 40,000 people. The conclusion is reached that the extent of labor wastage due to discontinuity of employment is very considerable even in the best managed factories, an amount which must prejudicially affect output. A very large percentage of this wastage is inexplicable, that is, persons who leave their employment without divulging the reasons therefor. The author feels that the most promising means for reducing this is welfare work and this is, in a measure, borne out by the analysis. The use of additional paper system to define these causes for leaving would reduce the statistical "not sufficient reason" group, but would not, on the other hand, keep these people employed. A good system of follow-up would probably help greatly to stabilize matters.

A portion of the study was given over to the con-

sideration of the effects on female workers of various age-groups of *heavy* contrasted with *ordinary* munition work. The conclusion is reached that while the general strain of factory life is not borne worse by older than by younger women, however, when the degree of physical effort is greater, it appears that women over 23 years of age cannot stand the strain as well as their juniors. — L. Greenburg.

England's Care of Mothers — Essentials for Public Care of Maternity and Infancy. *Eleanor Barton.* Child-Welfare Magazine, Oct., 1919, 14, No. 2, 47–49. — This is a report of the work of the Woman's Co-operative Guild of England, which for several years has been devoting special attention to the problem of public care of maternity. The efforts have included the gathering of data, influencing public opinion through the publication of pamphlets, etc. Compulsory notification of births has been secured, maternity centers where advice and minor treatment are provided have been established, and health visitors and maternity homes have been provided. A service of home helps has been organized, especially directed to relieve the burden of working-class mothers. — G. E. Partridge.

Report of National Child Labor Committee. *Mrs. G. B. Chandler.* Child-Welfare Magazine, Oct., 1919, 14, No. 2, 53. — This touches upon questions of public protection of maternity and infancy, mother's care of older children, child labor laws, and the recreation of children and youths. Reference is made to the Children's Bureau of the U. S. Department of Labor and to the National Child Labor Committee, as available sources of suggestions, advice and literature for those interested. — G. E. Partridge.

INDUSTRIAL SANITATION: ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

Ventilating Equipment Reduces Mortality During Winter. *E. Vernon Hill.* Dom. Engin., Oct. 25, 1919, 89, No. 4, 167–168. — The author believes that the low humidity, the excessive amount of dust which we inhale — usually the direct cause of the former — and the many other unfavorable conditions, which are all properly classed under *improper ventilation*, are responsible for the rapidly rising death rate which amounts, conservatively estimated, to not less than 100,000 human lives each year in the United States alone. The statistical reasoning of the paper is not quite clear. — G. M. Fair.

More Air for Offices and Drafting Rooms. *Charles L. Hubbard.* Factory, Nov., 1919, 23, No. 5, 1050–1052. — A brief discussion of possible methods for ventilating offices and drafting rooms in old buildings where arrangements were not made originally for such ventilation. The writer calls attention to the fact that in the case of workers performing tasks which call for mental rather than physical activity, there is an imperative need for a constant supply of fresh air. One of the plans which is suggested is the installation of a fan and heater unit for supplying air at a uniform temperature through ducts carried into the rooms along the ceiling. In a somewhat similarly arranged delivery system, hot air is delivered at a high velocity into the ducts, and air at outside temperature is drawn in and mixed with it before it reaches the rooms for which it is intended. A much simpler and somewhat less satisfactory arrangement provides for small suction or exhaust fans attached to windows. In any system where fresh air is brought into a room by mechanical means care should be taken to provide against undesirable currents. — C. H. Paull.

Ozone as a Disinfectant in Water Purification. *Joseph W. Ellms.* Munic. Eng., Oct., 1919, 57, No. 4, 186–188. — Ozone used as a disinfecting agent is no more a cure-all for a polluted water supply than are other disinfecting agents that are at present more widely employed. As a supplement to filtration, ozone can be used with good effect, and thereby renders the water safe for drinking purposes. — G. M. Fair.

Electrical Treatment of Sewage: The Landreth Direct-Oxidation Process. *H. J. M. Creighton* and *B. Franklin.* Abstracted from Jour. Franklin Inst., 1919, 188, 157–187, by J. S. Hepburn in Chem. Abstr., Nov. 10, 1919, 13, No. 21, 2719. — "Methods for the purification of sewage by electricity are reviewed. A detailed description is given of the Landreth direct-oxidation process (use of both electricity and lime), and of the million-gallon unit demonstration plant for this process installed at Easton, Pa. Results of tests conducted at this plant are reported in detail. Chem. and bacterial analyses were made of both the raw sewage and the effluent from the Landreth app. In order to obtain comparative data, 3 separate series of tests were conducted with the app. treating the raw sewage with (1) both electricity and lime (Landreth's process), (2) lime alone, and (3) electricity alone." The Landreth process showed consistently better results than the other two, causing a greater increase in nitrites and nitrates, greater decrease in free NH_3 and albuminoid NH_3, about double the decrease of required oxygen, and a reduction in the bacterial counts. The average greater bacterial reduction at 20° C. was 92 per cent. with the Landreth process, 90 per cent. with lime alone, and 70 per cent. with electricity alone. At 37° C. the count was 93 per cent. reduction with the electrolytic-lime treatment, 82 per cent. with lime alone, and 38 per cent. with electricity alone. The Landreth plant compares favorably with that of any other process in per capita cost of construction. — W. O. Fenn.

MEDICAL DISPENSARIES AND HOSPITALS IN INDUSTRIAL PLANTS

PROSPECTUS FOR WORKINGMEN'S HOSPITAL. Mod. Hosp., Oct., 1919, 13, No. 4, 358. — A new type of hospital is suggested in which the working class rather than the employing class would have a chief voice in the management. The prospectus outlines the objects of such a hospital, its financing, and the control of its policies. — A. B. Emmons.

THE INDUSTRIAL SITUATION ABROAD FOLLOWING THE WAR. An Abridgment of Reports of the Commission sent by the National Civic Federation. The National Civic Federation Review, Sept. 30, 1919, 4, No. 19, 4–5. — The conditions of the war have inspired among all classes of people a greater interest in humanity and a greater regard for the physical and social conditions under which the masses of the population live. In both Great Britain and France, the governments are adopting measures for fostering individual and associated interest in and the subsidizing of improved industrial and community housing, and the prompt building of modern homes for workers. The houses in Great Britain are described as insanitary, the solid masonry making the introduction of modern improvements difficult. "With few exceptions the housing of industrial workers of Great Britain is in towns and cities which have preceded the industrial plants, and rarely has housing been constructed as an integral part of an industrial plant." In the mining industry, employers have provided housing to an extent of about one-third of the population. Mining towns are likely, therefore, to receive particular attention in Great Britain's immediate housing program. Up to 1916, about half a million persons in England had been housed through constructive housing legislation, at a cost of approximately seven and a half million pounds. The results have been gratifying, however. Model dwellings on cleared slums in London showed a decrease in the death rate from forty to thirteen per thousand. In Port Sunlight, just outside Liverpool, seven-year-old boys average two and seven-tenths inches taller and seven and one-half pounds heavier than those in Liverpool itself. Some details are given of the measures and plans of the government. The paper would be more valuable if references were given for verification of the statements made. — G. E. Partridge.

INDUSTRIAL, PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

GOOD HOUSING AS A REDUCER OF LABOR TURNOVER. *Boyd Fisher.* National Housing Association Publications, No. 53, March, 1919, pp. 28. — Private employers may be persuaded to build houses for their workmen only when it can be demonstrated that it is for their advantage to do so. Reports from industrial plants throughout the country afford incontrovertible evidence that labor turnover has been greatly increased by the lack of sufficient or decent housing accommodations. The body of this article is devoted to data and information from which conclusions may be drawn relative to this subject. Whatsoever housing plan may be adopted, however, the greatest possible care must be exercised not to interfere in any way with the freedom and rights of the workers; otherwise, such an undertaking would fall far short of its purpose. — L. A. Shaw.

THE COST AND VALUE OF GOOD HOUSING TO OUR INDUSTRIAL LIFE. *Leslie H. Allen.* National Housing Association Publications, No. 54, March, 1919, pp. 17. — The workers of our great industrial centers are restless and dissatisfied. After working a short time in one plant, they move on to the next town where they take up a similar job. Employers are confronted with labor turnover as one of their most serious problems. The losses thus sustained are five in number:

1. The new employee is liable to spoil valuable material or merchandise.
2. It takes him some time to learn his job during which he produces less than his fellow-workmen.
3. He is apt to damage intricate machinery by his carelessness.
4. The foreman has to spend a good deal of his time teaching him his new job — time that should be spent managing the whole shop.
5. The clerical work of hiring the men and paying them off as they leave is quite considerable.

The fact is that, in spite of high wages, the living conditions in our manufacturing centers are so miserable that a workman cannot endure a long stay in one place, and he soon moves on in the vain hope of finding something more endurable. Whether or not the cost of good housing may be defrayed by greater production is yet a question; but quite apart from business considerations, it is our duty to check the rising tide of discontent which is producing anarchistic conditions in this country. The comfort of a decent home will prove a potent factor in the solution of this problem. — L. A. Shaw.

THE HEALTH OF MANCHESTER. *P. Alden.* Progress, Jan.–March, 1919, 14, No. 1, 1–13. — Manchester is an industrial city with a population of 760,000, the conditions, health control and sanitary needs of which are briefly reviewed in this article. There is nothing new or unusual reported, but the paper attracts attention as a clear presentation of facts. The author states that we are beginning at last to understand the principles of hygiene and preventive medicine, but he appears to think it remarkable that, although Parliament has devoted so much time to public health work, this work has no department of its own. — G. E. Partridge.

INDUSTRIAL MANAGEMENT IN ITS HEALTH RELATIONS: SPECIAL TESTS IN THE SELECTION OF EMPLOYEES

A Group Intelligence Test. *C. E.* and *G. C. Myers.* School and Society, Sept. 20, 1919, 10, No. 247, 355–360. — The "Beta" test as used for the Army made it possible for men who could not read or write English, or even understand English with ease, to make a proper score in an intelligence rating test. The writers of this paper have attempted to work out tests adapted to group-testing of children. The tests and the discussion are of value to any one interested in group-testing in any of its applications. — G. E. Partridge.

A Non-Language Group Intelligence Test. *R. Pintner.* Jour. Applied Psychology, Sept., 1919, 3, No. 3, 199–214. — The writer has worked out a series of tests suitable for testing either children or adults, and especially adapted to intelligence testing where there are many foreigners or illiterates. Thus far the Army Beta Test and Thorndike's Group Test are the only available methods which do not employ language. The present tests, upon which the author says he has been at work for two years, include six non-language tests, arranged for use in group examining, about thirty minutes being required for the whole procedure. The tests are: (1) an imitation test, in which the subject draws lines connecting dots, imitating moves of the experimenter made on a blackboard diagram; (2) an easy substitution test, in which three digits and three symbols are used; (3) a more difficult test of the same kind, using nine digits and symbols; (4) a drawing-completion test; (5) a reversed drawing test, in which the subject completes figures, the models being shown reversed; and (6) a picture reconstruction test, in which the subject indicates the order of a disarranged picture without being allowed to manipulate the parts. Some data on the correlations and tables, etc., showing distribution of scores by ages and scores of two classes of adults, are given. — G. E. Partridge.

The Response of a Composite Group to the Stanford Revision of the Binet-Simon Tests. *H. W. Chase* and *C. C. Carpenter.* The Journal of Educational Psychology, April, 1919, 10, No. 4, 179–188. — This is a report of examinations made, by the Terman method, of a group of children in North Carolina. The statistical results cannot be presented in a brief review, but the paper has some importance for its bearing upon the question of intelligence quotients in their relations to environment and social status. The authors think that, if standard tests are to be used throughout the country, a great amount of work must be done in the derivation of norms. We cannot judge satisfactorily the intelligence of an individual without knowing first what normal intelligence means in the community from which he comes. Standards must perhaps be different for rural and for city groups. — G. E. Partridge.

A Standardized Test for Office Clerks. *L. L. Thurstone.* Jour. Applied Psychology, Sept., 1919, 3, 248–251. — The examination here reported has been taken by about 5000 office clerks and has been standardized. The assumption is that a test by means of a sample piece of office work extending over a period of forty-five or sixty minutes is better than a general intelligence test, and more economical than extended observation during trial employment. Thurstone's test has eight processes. The candidate checks errors in addition and subtraction, underscores incorrectly spelled words, cancels letters, learns a short code, alphabetizes and groups names, classifies complex material, performs arithmetical calculations, and matches proverbs according to meaning (a general intelligence test). Some data toward a statistical evaluation of the test are given, showing the following correlations in grade of office work: with accuracy in the test, +.50; with speed in the test, +.42; with schooling, +.47; with age, +.35. — G. E. Partridge.

INDUSTRIAL SERVICE AND MUTUAL BENEFIT ASSOCIATIONS

A Welfare Work that Spares no Expense. *Rose C. Armstrong.* Mod. Hosp., Oct., 1919, 13, No. 4, 357–358. — This article gives an account of the welfare work in the Peoples Gas Light and Coke Company, Chicago. The chief feature emphasized is the employees' dining room which provides good food and excellent service at a nominal cost. The work of the medical department includes: (1) medical examinations; (2) general supervision of health; (3) education in hygiene; and (4) first aid. — A. B. Emmons.

ABSTRACT OF THE LITERATURE

OF

INDUSTRIAL HYGIENE

VOLUME I FEBRUARY, 1920 NUMBER 10

CONTENTS

	PAGE
General	155
Poisonous Hazards and Their Effects: Gases, Chemicals, etc.	161
Occupational Affections of the Skin and Special Senses	163
Occurrence and Prevention of Industrial Accidents	163
Industrial Surgery	164
Fatigue and Occupational Neuroses	164
Hazards of Compressed Air, Diminished Pressure, Generation and Use of Electricity, and Electrical Welding	165
Heat, Cold and Humidity	165
Women and Children in Industry	165
Industrial Sanitation: Illumination, Ventilation, Heating, Water Supply, Sewage Disposal	165
Medical Dispensaries and Hospitals in Industrial Plants	166
Industrial, Personal and Community Hygiene: Housing, etc.	166
Industrial Management in its Health Relations: Special Tests in the Selection of Employees	167
Industrial Service and Mutual Benefit Associations	168
Workmen's Compensation and Insurance	168

GENERAL

GREAT BRITAIN, ANN. REP. CHIEF INSPECT. FACTORIES AND WORKSHOPS FOR 1918. Parliamentary Paper, Cmd. 340, 1919, pp. iii–vii. — During the past year, as during the war period, much attention was paid to matters of safety, health, and welfare, including reduction in the hours of labor. Experience has shown that an increase in the ordinary hours of work does not necessarily mean an increase in production; that the more the comfort and welfare of the worker is studied and provided for, the greater is his output; and that attention given to accident prevention and health means greater efficiency and reduced charges. Further, improvement will be assisted, (1) by the powers under the Miscellaneous Provisions Act of 1916 which enables the Secretary of State to issue orders requiring special welfare provision to be made wherever necessary, either for individual work or for works of any particular class; (2) by the adoption of the recommendation in the Report of the Whitley Committee for the establishment of national industrial councils representative of employers and employees; and (3) by the appreciation of numerous employers of the benefits to be derived. The past year was especially marked by a great advance in the voluntary movement on the part of employers and workers to reduce hours of labor. The tendency has been to eliminate work before breakfast with apparent satisfaction to all concerned.

At the instance of the Home Office, the Department of Scientific and Industrial Research and the Medical Research Committee have jointly appointed a body of experts known as the Industrial Fatigue Research Board to investigate the relations of hours of labor and other conditions of employment (including methods of work) to the production of fatigue, having regard both to industrial efficiency and to the preservation of health among the workers. Its work should have an important bearing on future regulation of the hours of labor.

Safety has been much extended by education. In spite of the enormous increase in industry in the amount of machinery and in the introduction of female labor, the total of reportable accidents has decreased. There was some increase in the serious machinery and fatal accidents, the decrease being

entirely in the non-machinery class of accidents. It is suggested that the chief cause of the decrease is the greater care exercised by managers and foremen in works in which women were largely introduced, and the extension of the safety-first movement. At a meeting of employers and workers in industry generally, there was formed the British Industrial Safety First Association; and a considerable amount of propaganda work has already been undertaken by this body.

Welfare has been extended largely by (1) the conditions attached to the Emergency Orders issued by the Home Office relaxing the statutory periods of employment; (2) the Reports and Memoranda issued by the Health of Munition Workers' Committee; (3) the establishment of a Welfare Section in the Ministry of Munitions; and (4) the powers to make Welfare Orders given to the Home Office in the Act of 1916. Enlistment of the active sympathy and co-operation of employers and workers has been sought and the establishment of joint industrial councils welcomed. Steps have been taken to get into touch with each council at an early meeting to bring before it such matters as the health, safety, and welfare of the workers, and to urge co-operation not only in carrying out statutory requirements, but in considering and bringing about further improvements.

Cases of T. N. T. poisoning fell from 190 in 1917 to 34 in 1918. A considerable increase has been reported in cases of anthrax among wool workers. The Departmental Committee on Anthrax made far-reaching proposals in its report last year. A bill based on these proposals has recently been passed and provides for the prohibition of importation of goods infected with anthrax, and authorizes arranging for the disinfection of infected foods. In the meantime, steps are being taken by the Home Office to set up an experimental disinfection station.

The following special reports are appended to the Annual Report of the Chief Inspector:

Hours of Work, by R. E. Graves, Deputy Chief Inspector.

Accident Prevention and Safety First, by G. Bellhouse, Deputy Chief Inspector.

Labour-Saving Appliances, by G. S. Taylor, Inspector for Dangerous Trades.

Welfare in Factories and Workshops, by Miss A. M. Anderson, Principal Lady Inspector.

Ambulance and First Aid, by J. C. Bridge, Medical Inspector.

Continuation Classes, by G. Bellhouse.

Use of Electricity in Factories, by G. S. Ram, Electrical Inspector.

Industrial Poisoning, by T. M. Legge, Medical Inspector.

Abstracts of these special reports are classified according to their respective subjects. — Barnett Cohen.

Need and Method of Co-ordinating Federal, State and Local Health Agencies in Promoting Industrial Hygiene. *J. W. Schereschewsky.* Am. Jour. Pub. Health, Dec., 1919, 9, No. 12, 937–942. — This author says that what the country needs is not extension of federal authority so much as health education of the people to support what exists. The U. S. P. H. S. has already all the power that may constitutionally be given to a federal agency; it has a distinct industrial health program, and all it needs is good financial support.

This program has already been published in Supplement No. 36 to the Public Health Reports of May 9, 1919, as part of a general health program to meet after-the-war needs proposed by the Public Health Service. This program was presented to Congress by the Secretary of the Treasury with an urgent appeal to provide the funds for carrying it out. So far, Congress has not appropriated the funds.

The section of the program dealing with industrial health includes:

1. Health surveys of industries,
2. Industrial morbidity reporting,
3. Adequate systems of medical and surgical supervision of industrial workers,
4. Establishment of minimum health standards,
5. Improvement of the sanitation of industrial communities,
6. Medical and sanitary supervision by the Public Health Service of civil industrial establishments owned or operated by the federal government. — H. F. Smyth.

The Physician and Surgeon in the Industrial Crisis. *Otto P. Geier.* Am. Industries, Nov., 1919, 20, No. 4, 26–29. — The writer points out that in the past one of the great faults of the so-called industrial physician has been his failure to appreciate the fact that his work differed essentially from that of the family physician. The real industrial physician must "enter into the life and understanding of industry. He must have knowledge of the sanitary standards of plants, of occupational diseases, the subject of fatigue, the principles of safety work." He must visualize through the worker "the shop, the bench, the particular occupation that is affecting him; the dirt, the danger, the monotony, and the home environment." He must educate as well as heal. In this way he will make his contribution toward humanizing industry. He will become a real factor in the solving of labor problems. — C. H. Paull.

Reviews of Social Hygiene. *A. Elster.* Offentliche Gesundheitspflege, 1917, Nos. 3, 4, 5, 7. — These reviews contain brief summaries of lines of progress in special branches of hygiene, such as housing, child welfare, school and industrial hygiene, contagion prevention, etc. Special attention is given to the legislative aspects of the problems and to such questions as social insurance. Local problems issuing from war conditions are the chief topics of the reviews, but there are items that will be of interest especially to one who is giving attention to problems of insurance.

Number 4 of the above mentioned periodical contains a brief but valuable summary of recent litera-

ture on disinfection apparatus (p. 223–224). — G. E. Partridge.

Industrial Welfare Activities. National Association of Corporation Schools Bulletin, Jan.–Oct., 1919. — These numbers contain many brief articles that are of interest from the standpoint of industrial problems. There are several accounts of experiments in co-operative and representative organization and control of industrial plants, and of welfare activities, such as the plan of the Midville Steel and Ordnance Company, the employees' representation plan of the Western Union Telegraph Company, the employees' restaurant at the Wisconsin Steel Works, the dental clinic of the National Cash Register Company, the Goodyear industrial representation plan, and the medical department of the New York Telephone Company. There is a general report of progress in the movement to insure employee representation in management. — G. E. Partridge.

Welfare Work. National Association of Corporation Schools Bulletin, Nov.–Dec., 1919, 6, Nos. 11 and 12. — These numbers contain several brief reports of welfare work, including an account of the aid association of the Packard Motor Car Company, a voluntary association of employees inspired by the epidemic of influenza and intended to make provision for protection in case of sickness or accident. There is also a report of the Goodyear representation plan, in which specific benefits of the plan are mentioned. There are articles on democratized industry; the use of the municipal university to increase industrial education and welfare; aiding employees to personal development; an educational system for a modern department store; the housing plan of the National City Bank of New York; the organization policy of the Bell Telephone System. — G. E. Partridge.

Data and Recommendations for the International Labor Conference, Washington, October 29, 1919. Am. Labor Legis. Rev., Sept., 1919, 9, No. 3, 302–314. — A brief outline of the origin of the International Labor Conference as it was provided for in the terms of the Peace Treaty. The first meeting of the conference was to be in Washington where the following questions were to be considered:

"1. Application of principle of the 8-hours day or of the 48-hours week.

2. Question of preventing or providing against unemployment.

3. Women's employment:
   (a) Before and after childbirth, including the question of maternity benefit.
   (b) During the night.
   (c) In unhealthy processes.

4. Employment of children:
   (a) Minimum age of employment.
   (b) During the night.
   (c) In unhealthy processes.

5. Extension and application of the International Convention adopted at Berne in 1906 on the prohibition of night work for women employed in industry, and the prohibition of the use of white phosphorus in the manufacture of matches."

The organizing committee prepared preliminary reports dealing with the history of each of the five labor questions as they have received recognition in various countries. The committee further made recommendations regarding the procedure of the conference in dealing with each question. It favored the 48-hours week with a maximum number of hours of overtime per year and recommended the careful consideration of means of reducing unemployment to a minimum. In connection with the employment of women, action was recommended in the regulation of uniform hours of work, the provision for maternity benefits, and the regulation of work in unhealthy processes. In considering the employment of children, the committee called attention to the desirability of a minimum working age and of regulations as to the employment of children in unhealthy occupations. — C. H. Paull.

International Labor Standards and their Possible Enforcement in the United States. *G. W. Wickersham.* Proceedings of the Academy of Political Science, July, 1919, 8, No. 3, 50–67. — In this paper the writer has reviewed the recent conventions and discussions, such as the British National Industrial Conference, the program of the General Confederation of Labor in France, the Conference of the American Federation of Labor, in most of the programs of which he thinks that three fallacies have been involved: (1) that better conditions for the commonwealth than those which prevail can be secured by entrusting the government with the ownership and conduct of important industries; (2) that the policy of giving to organizations of workers control over the means of conduct of industry can result in the permanent betterment of such industry; and (3) that the grant of larger wages to the workers will reduce the cost of living and increase the general prosperity. We cannot, however, return to the old system of unrestricted control of workers by employers. In fact, the prosperity of the country rests upon securing a just balance between the right recognition of the share of the worker in the profits of his industry and the necessarily greater profit to be allowed to the planning and directing brain. — G. E. Partridge.

International Labor Legislation and How it Can be Enforced in the United States. *A. I. Elkus.* Proceedings of the Academy of Political Science, July, 1919, 8, No. 3, 80–85. — It is very important now to create standards that can be recognized by all the great nations of the earth, especially with reference to men, women and children in industry. As the foundation of all international standards there should be the agreement that no child under 14 years should be permitted to work. There should also be a provision that children between the ages of 14 and 16 should be limited to certain kinds of work,

and should be allowed to work only a limited number of hours, and only under the condition that their education is to be continued. Some standard in regard to hours of labor must be established so that all man-provided local conditions do not interfere, but may have a common norm for the working life. Everywhere there must be a principle of the living wage. There should be a universal provision that every worker have at least one day in seven for rest so far as peculiar conditions do not make this impossible. Men and women must be paid alike for equal work. These are the cardinal principles upon which an international agreement might work. Every one of them has as its foundation some inalienable human right. — G. E. Partridge.

The Four Partners in Industry. *J. D. Rockefeller, Jr.* The Forum, Feb., 1919, 61, No. 2, 178–188. — Capital, management, labor and the community, the four partners in industry, have a common interest of such a nature that they cannot afford to be antagonistic to one another. Organization of each party with reference to industry is legitimate and necessary, although it has its dangers. The greatest problem with regard to the welfare of labor and of the other parties interested in industry is to secure the right representation of all in the control of industry. The Whitley Report made by the Reconstruction Committee, now the Ministry of Reconstruction, in England is discussed, and the various plans that have been suggested or put into operation independently by great corporations in this country. Methods of representation, the President's industrial representative, and the employees' right of appeal are briefly commented upon. An industrial creed, or set of basic principles, is offered, which the writer thinks might be used as a means of establishing a sound and lasting co-ordination of the four parties in industry. — G. E. Partridge.

Industrial Losses. *B. J. Newman.* American Federationist, Nov., 1919, 26, No. 11, 1032–1034. — Industrial work as directed in this country today is wasteful to such an extent that, if the waste were corrected, payment of a living wage to all workers would be possible, capital also having a fair return. It is estimated, for example, on the basis of numerous surveys that every year industry in the United States loses through illness about 280,000,000 working days. More than half of this loss is unnecessary, being in part due to inefficient health work in industrial communities, and, to a still greater degree, to working conditions which injure health. Few industrial plants as yet tabulate their records of absence, although this is important both from the standpoint of the employer and in the interest of the workman. The cost of production is increased by interruption of work, and the aggregate loss to the worker is very large. One factor in the remedy must be the determination of the effects upon health of all the processes of industry. For most of the hazards, definite engineering and other preventive measures are available. How extensive this problem is can be understood from the fact that there are now known 126 processes in which dust is alleged to be a health hazard, and 650 processes in which poisons are to be guarded against. Another very important factor in the reduction of losses from sickness, one not as yet sufficiently emphasized, is the adequate provision of personal service facilities of a sanitary character in proper proportion to the number of employees. — G. E. Partridge.

Taking the Guesswork out of Employment. *Alfred Fischer.* Factory, Nov., 1919, 23, No. 5, 1057–1058. — In this brief article, Mr. Fischer outlines some of the activities of the Red Cross Institute for the Blind. In looking for opportunities to place blind workers, this organization has made a series of studies in different industries with the idea of determining what the physical requirements for various jobs actually are. The results of these studies have been recorded in graphic form with a series of symbols to indicate the qualifications in the case of each job. — C. H. Paull.

The Paper Box Industry and the Strike. Bull. N. Y. State Ind. Com., Oct., 1919, 5, No. 1, 8. — An analysis of the condition of women employed in the paper box factories of New York City, based upon data furnished by the survey made by the Bureau of Women in Industry. — L. A. Shaw.

Short-Hour Campaign of the Textile Workers. *J. Golden.* American Federationist, March, 1919, 36, No. 3, 247–248. — The United Textile Workers of America have undertaken the task of bringing about the eight-hour day for every textile worker in the country. — G. E. Partridge.

Reasons Why Night Work Should be Abolished in Bakeries. *C. Iffland.* American Federationist, May, 1919, 36, No. 5, 407–409. — If the statements made in this paper are correct, the conditions of work in bakeries are very bad, and unnecessary night work is continued from force of habit and from a spirit of competition that has led bakers in the past to outdo one another in early delivery of their goods. Some data in regard to the bad effects of night work in general are given, in the form of quotations from physiologists and others. — G. E. Partridge.

On the Creation of Inspectors of Industrial Hygiene. *Doizy.* Rev. d'hyg., Sept., 1919, 41, No. 9, 813–824. — Text and exposition of proposed modifications of the existing French law governing the appointment and duties of inspectors of industrial hygiene. — Wade Wright.

National Supremacy, Industrial Education and Co-operation. *G. F. Arps.* School and Society, Nov. 1, 1919, 10, No. 253, 501–509. — The writer pleads for a broader conception of industrial education and of the relation of the human organism to industry. The great error in the past has been the treatment of labor as essentially physical, to the

neglect of the psychological factor. It is the power of adaptation and learning, and the capacity for originality that are of the highest importance in industry; therefore a detailed study of the nature of the human organism and its mode of behavior is essential to the solution of the relation of the man to his work, and of the man to his employer, the former being the more fundamental problem. "The secret of integrity, industry, and thoroughness consists in anchoring the youth, destined by choice or circumstances to pursue an artisan calling, to that form of educational training which will avoid two undesirable alternatives, namely, (1) leave him unskilled or relatively so and (2) let him, if possible, acquire skill vicariously in the declining formative period." The writer points out that (according to a Congressional Report of 1914) less than 1 per cent. of the 14,250,000 engaged in the industries in the United States have had an opportunity to become skilled workmen. The wastage from lack of skill is not the only loss; we must consider also the wastage in national character. The remedy is a thoroughgoing system of industrial education, which will have for its main purpose furnishing skilled labor to the industries. These schools should be trade schools in every sense of the term, and in no way an appendage of the old school system. — G. E. Partridge.

The Education Act of 1918. *A. E. Dean.* L'Education, March–June, 1919, 11, Nos. 1 and 2, 32–41. — The writer analyzes and comments on the English Education Act of 1918, and thinks it is a very important advance in English education. In an historical sketch it is pointed out that great educational reforms are likely to follow great wars, as is shown by the reforms in Germany after the Napoleonic Wars, in England after Waterloo, and in France after 1870. The increased centralization of the new educational plan, the regulation of child labor, school attendance, medical service and physical culture are discussed, but the writer maintains that the introduction of the supplementary school for workers is the most radical and the most important of all the changes provided for by the English Education Act. Its greatest significance is its place as a definite and historically marked turning of interest in the direction of the education of the adult. — G. E. Partridge.

Argument for Larger Projects Suggestive of Community Activity. *T. R. Foulkes* and *T. Diamond.* Manual Training Magazine, Sept., 1919, 21, No. 1, 5–8. — A study of the projects made and used by 1532 pupils in manual training classes in thirty-six cities of Wisconsin shows both a need of and a natural interest in projects in which there is group interest. There ought to be provision for one large project, on the community plan, by each class or each school every year. — G. E. Partridge.

The Field of Manual Arts in Terms of Present Needs. *I. S. Griffith.* Manual Training Magazine, Sept., 1919, 21, No. 1, 1–5. — Some suggestions are made with reference to the adjustment of manual training work in high schools to meet the requirements of different classes of students. An industrial intelligence course or an industrial economics course should be a part of the curriculum of the general education course. — G. E. Partridge.

The Psychological Foundations of the "School of Work." *A. Ferrière.* Revue psychologique, 1914, 7, No. 2, 105–140. (Received Oct. 7, 1919.) — This is an important study of the psychological and biological foundations of education through productive activity. Such terms as *Arbeitsschule* and *Manual Training Schools* are criticized as meaning something less than work as an educative process implies. True work is a spontaneous and intelligent activity that springs from within. The author's "School of Work" does not exist anywhere in a completed form, but various aspects of it are represented in many schools — i. e., wherever there is activity that is productive and individual. The argument of the paper will not be new to those who have in mind the biological principles of education as elaborated by G. Stanley Hall, and the sociological background of educational theory worked out by John Dewey, but there will be found here a thorough and profound study of the relation of manual activity to both practical and general education. Manual work, even definite occupation, may be taught practically, but there is a wide difference between mechanical and creative work. A classification of interests according to age is offered, five periods being distinguished: period of play; of immediate interests; of specialized interests; of simple abstract interests; of complex abstract interests. The applications of the principles of activity to manual work, intellectual culture, social and moral development are suggested. The education of the present time is still too exclusively verbal and intellectual. Education must once more become what it was before pedagogues made it artificial — a form of action and reaction between the individual and the world in which he lives. — G. E. Partridge.

Continuation Classes. *Gerald Bellhouse.* Great Britain, Ann. Rep. Chief Inspect. Factories and Workshops for 1918, pp. 51–56. — The new Education Act will bring to an end the half-time system of employment of children; and secondly, it will establish a different part-time system, under which all young persons, with certain exceptions, will be required after leaving day-school to attend continuation schools until they reach the age of 16 years. Henceforward no children will leave school till they are 14, and after that age all will be required to continue their education. Numerous industrial plants have undertaken voluntarily the establishment of continuation classes for their juvenile employees. There is considerable variation in the application of the various educational schemes. In many cases attendance at school is compulsory and is a condition of employment; in others, it is voluntary but the firms offer inducements to encourage attendance. There are also variations as to eligibility, payment of fees, adjustment of hours and types of inducement

to attend. Details are given of the schemes followed in ten different plants. — Barnett Cohen.

THE VOCATIONAL COUNSELLOR AND HIS WORK. *H. E. Stone.* Education, Dec., 1919, 11, No. 4, 214–216. — During the past decade a new specialist has appeared in the world of education — the vocational counsellor. In many large cities there are such specialists devoting all their time to the work of guidance and research. The aim of the article is to show the opportunities offered to men and women who desire to specialize in this branch of applied psychology. — G. E. Partridge.

CHOOSING A VOCATION IN JUNIOR HIGH SCHOOL. *F. P. Whitney.* Education, Oct., 1919, 11, No. 2, 120–126. — The writer has made an investigation, by questionnaire, of the occupational preferences of 805 high-school pupils — 392 boys and 413 girls. One result of the inquiry is the discovery of the absence of any relation between family occupations and the choice of the child. In but nine cases did boys select the father's occupation. One child in forty chooses the same calling as some other member of the family, and only one in eighty the same calling as the father. Nearly half of the children admitted that they knew practically nothing about the father's work. The study indicates to the writer that it is dangerous to base either industrial training or vocational guidance upon other than a very wide survey of the industries and callings that are open to men and women everywhere. Boys and girls leaving school are confronted with an almost innumerable variety of possible occupations. The problem seems to be to reduce the number of haphazard choices and resulting misfits.

The immediate and specific needs are: (1) the addition to the industrial course for boys of work along electrical lines, and also of work on machines; (2) the extension of opportunities to learn typewriting and other commercial occupations, especially for girls; (3) the development of vocational guidance; (4) the provision of a different type, as well as material, of instruction for those destined to leave school before entering the senior year of the high school. This might be of the nature of prevocational education. — G. E. Partridge.

THE FUTURE OF AGRICULTURAL EDUCATION. *T. F. Hunt.* School and Society, Oct. 4, 1919, 10, No. 249, 381–388. — The author discusses the place of the teaching of agriculture in the secondary school. As the secondary school is usually chosen for the pupil, it should offer, therefore, the widest possible range of opportunity. In the opinion of the author, high schools will generally obtain the best results if they do not attempt to teach more than two years of agricultural subjects. One year with thorough instruction, whether on the Smith-Hughes plan or standard agriculture, will be better than two years indifferently taught. One-eighth of the time in the high school is sufficient to give to agricultural or other vocational study. In general, the aim should be to continue education to the time of majority, or else the age of majority should be changed, and during the years just preceding majority vocational education should be most emphasized. It is especially important that the agricultural student be of age when he is ready to go to work.

In planning agricultural courses, the fact that the number of people desiring such training is proportional to the total population in a district, not to the number of farms, must be considered. It is a human interest and not only a trade interest that determines the desire. A great number of the students in agricultural colleges come from the cities. — G. E. Partridge.

INCREASED PRODUCTION THROUGH INDUSTRIAL TRAINING. The National Civic Federation Review, Jan. 1, 1920, 5, No. 1, 12. — The relation of factory industrial training to the world-wide need of increased production was given consideration at a special meeting recently called by the Chairman of the Industrial Training Department of the National Civic Federation. Enormous increase in production has been shown to occur whenever there has been introduced a vestibule school in which beginners are trained, the skilled up-graded, and new employees tested for proper placement. There is an inclination now to continue to benefit by the experience gained during the war and to develop the educational side of industrial organization. — G. E. Partridge.

SELECTED BIBLIOGRAPHY OF PHYSICAL TRAINING AND HYGIENE. May–August, 1919. American Physical Education Review, Dec., 1919, 24, No. 9, 496–502. — Contains sections on child welfare, eugenics, food and nutrition, health and social insurance, industrial hygiene, mental hygiene, public hygiene, school hygiene and social hygiene. — G. E. Partridge.

MONTHLY RECORD OF CURRENT EDUCATIONAL PUBLICATIONS. Bureau of Education; Bulletin No. 67, Washington, 1919, Government Printing Office. — This contains sections on child welfare, manual and vocational training, vocational guidance, vocational tests, agricultural education, commercial education, education of soldiers, etc. — G. E. Partridge.

LICE: THE DISEASES CARRIED BY THEM AND THE MEASURES AVAILABLE FOR THE PROTECTION OF CHILDREN AND CIVILIANS. *A. Bacot.* School Hygiene, March, 1919, 10, No. 1, 33–48. — The writer, who is entomologist to the Lister Institute of Preventive Medicine, England, has contributed a valuable study upon the position and relationship of lice, their habits and life history, the effects of their bites, their part in the transmission of diseases, preventive measures, methods of destruction, remedies, etc. The details given in regard to remedies will be of practical use to health officers and nurses. There are data about laboratory tests with non-mercurial compounds. — G. E. Partridge.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

ARSENIC POISONING FROM COAL PRODUCTS. *A. Bayet* and *A. Slosse*. Bull. Acad. Med. Belgique, May, 1919, 29, No. 4, 607–626.—The writers establish that the industrial diseases due to coal and its products (soot, tar, pitch, anilin, etc.) are all very similar and show a great similarity to arsenic poisoning.

Now, by careful analysis, Professor Slosse has constantly found arsenic in soot, tar, pitch, etc. In the hair, blood and urine of pitch workers, arsenic has also been found. Even in the skin and in a cancer removed by operation, arsenic was present. It did not exist, on the contrary, in the hair of workmen living in the same village but not connected with the pitch industry. So the authors conclude that the coal products are causing not only irritation, but a real arsenic poisoning. — René Sand.

A STUDY OF THE MUNITIONS INTOXICATIONS IN FRANCE. *Roger G. Perkins*. U. S. Pub. Health Ser., Pub. Health Rep., Oct. 24, 1919, 34, No. 43, 2335–2374. — This study was made by Dr. Perkins under the auspices of the National Research Council, and was carried on while he was in Paris, the Ministry of Munitions having put at his service all of the material collected in the course of an extensive inquiry into the intoxications among munition workers in France during the war. While in England and the United States trinitrotoluol was the explosive which gave the most trouble, the French had scarcely any trouble at all in connection with its use, but dinitrophenol gave rise to a good deal of poisoning and Dr. Perkins' paper deals chiefly with this explosive.

The favorite French explosive is a combination of dinitrophenol, trinitrophenol (or picric acid) and trinitrotoluene, in varying proportions, a 40–50 mixture of D.N.P. and T.N.P. being the one most used. It was not possible to ascertain the exact number of workmen exposed to these compounds nor their racial distribution, because under the stress of war it was necessary to change groups of men from one place to another, and even to move the factory physicians from place to place, so that there could not be continuity or uniformity in the records. The actual cases of poisoning, however, were for the most part recognized and recorded.

Dinitrophenol is made by the French from benzene by the formation of monochlorbenzene which, by treatment with mixed acids, is changed to dinitrochlorbenzene. Further treatment by NaOH substitutes NaO for the Cl (NaCl), and the Na is removed by treatment with HCl, leaving the completed dinitrophenol.

It is obvious that there are six isomers possible, all of which are known, but the ordinary D.N.P. is the isomer 1–2–4. A further nitration results in the formation of trinitrophenol, which is again possible in six isomers, of which the most common is the isomer 1–2–4–6 (the ordinary picric acid or melinite).

Of the three portals of entry the skin is the most important, though in certain cases the records seem to show that the poison entered through the respiratory tract, and it is also possible that all three portals may be used. The work of Guerbet and Mayer shows that in the body D.N.P. is changed to reduction products, which may be recovered, together with unaltered D.N.P., in organs, blood and urine. The detection of one of these products, amino-2-nitro-4-phenol by the violet reaction of Derrien constitutes a test of decided clinical value.

There is a marked variation in susceptibility to this isomer which is not dependent upon age, for there was no child labor at all; all the workmen were within the mobilization age and there was no difference between the two limits of this age group. Nor did sex play any part, for no women were employed in the dangerous processes. In connection with the race factor in susceptibility, there are some interesting points. The men came from various parts of France and her colonies, so that there were men from the yellow races, Chinese and Annamites, and from the black, the Senegalese. In general, it was found that the Annamites were the least affected, the Senegalese next, and the whites most, but when he came to analyze these facts more closely, Dr. Perkins concluded that this apparent racial difference depended really on other factors, such as better discipline among the colonial workmen and more careful medical examination of the whites than of the colonials, leading to the detection of more cases. He believes that the susceptibility of all was probably equal. Alcoholism was found to play a very important part in predisposing to poisoning with D.N.P. and efforts were made to eliminate as far as possible the heavy drinkers.

The presence of albumin in the urine indicates marked susceptibility and it was the regular practice to exclude men with albuminuria. No relation between intoxication and lesions of the respiratory tract was found, but it was considered that the general physical condition of consumptives rendered them more susceptible. In general, it appears that the resistance in persons with a low grade of physical condition is less than in the healthy, and this is emphasized by the fact that in many cases workers who have been apparently resistant over long periods of time, if they are sick or overworked, may suddenly develop symptoms.

The clinical picture was worked up by Professor Etienne Martin, who describes three forms: 1. *Subacute intoxication*, which is important as enabling the physician to remove the worker from danger in time. There is anorexia, with a white and furred tongue, followed by nausea and vomiting; there may be diarrhea and colic. It is only exceptionally that there is icterus. There is complaint of decided loss of weight, general weakness with headache and dizziness, with moderate sweats, especially at night. A few days of rest are usually enough for a complete cure. The urine shows a positive Derrien, and when this increases or remains at a fairly high point it is a warning of an acute attack.

2. *Acute intoxication.* This usually follows the symptoms just described, with a sudden onset, complaint of having the arms and legs "cut off," of painful constriction at the base of the chest, and a burning thirst. The face is pale with slight cyanosis of the lips. There is abundant sweat and a characteristic agitation and anxiety. The breathing is short and difficult, especially inspiration. There is a moderate rise of temperature, but the pulse is regular and, with the occasional exception of a few râles at the bases, the lungs are clear. There is a marked diminution of the quantity of urine and a positive Derrien of increasing intensity, improvement being marked by increase of urine. Removal from work with a rest cure, is usually followed by rapid recovery, but no immunity follows such an attack, and these men require careful watching.

3. *Fulminating intoxication.* This is especially noted among alcoholics or persons with renal or hepatic troubles; death may take place in a few hours. The onset is sudden, with an attack of weakness or, less often, violent colic and diarrhea. A few hours later there is fever up to or over 40°C., abundant sweats which stain the skin yellow, even over the parts where there has been no exposure to the chemicals. There is intense thirst, the pupils are contracted, the patient is frightened and excited and there may be partial or general convulsions. This is followed by unconsciousness, coma and death in a few hours. It is the clinical picture of a fatal case of uremia. The symptoms in the severe cases which get well are much the same at first, but the second or third day shows marked improvement with rapid recovery. Some very rapid cases are described, developing while the workman was on his way home. He is found somewhere along the road, breathing with difficulty, covered with sweat, with a temperature of 41°C. or even 43°C. and he dies before anything can be done. Sometimes there is a rise of several degrees of temperature after death. Urine obtained by catheter shows an intense Derrien.

Perhaps the most interesting feature of the post-mortem examination is that no characteristic lesions are found. There may be edema of the lungs, at times a fatty infiltration of the liver, but the microscopic lesions in the liver and kidney cells are inconstant. The blood and organs always contain D.N.P. or its derivatives, but this is also true of the organs of workmen who die from accidental causes while employed on D.N.P.

It was supposed when the manufacture of D.N.P. was begun that the cases of poisoning which occurred among the workmen were due to impurities because the Service of Explosives had had long experience with picric acid and had had no trouble. Animal experiments, however, showed that all the impurities which it was possible to extract and all the compounds formed at various stages of manufacture, were less dangerous than the dinitrophenol 1–2–4. The animals tested were the horse, dog, rabbit, pigeon, turtle and frog, for all of which the toxic dose is 0.01 gram per kilo of animal. It is a specific poison, causing in all warm-blooded animals an exaggeration of the heat radiation activities, as shown by a thermic polypnoea in the dog, vasodilatation and sweating in the horse, with progressive elevation of the temperature which may rise to 45° C. at death. The extreme dehydration of the tissues leads to a very early rigor mortis, with delay of decomposition of the cadaver. The basis of these phenomena is an increase of combustion, which is not the result of a stimulation of the nervous system, for it occurs even in cold-blooded animals, has no relation to muscular work nor to any action on any special organ, but appears to be dependent on a general stimulation of cellular oxidation. In the blood and in the organs are found either the unchanged substance or its reduction products, the aminonitrophenols, and in the case of acute intoxication the amino-2-nitro-4-phenol is always present.

The administration of ortho or meta-mononitrophenol or of picric acid (trinitrophenol) gives none of the above results. Para-mononitrophenol and the 1–3–4 isomer of dinitrophenol do produce these results, but only transiently and in heavy doses. The other isomers have a very different effect, the 1–2–3 and the 1–3–5 cause the formation of methemoglobin. This indicates a very high specificity of dinitrophenol 1–2–4.

The protection of munition workers against this form of poisoning was based on the above studies and was directed to the prevention of contact with the poison, the elimination of the susceptible men, the detection of early symptoms, and the removal of those affected from work with D.N.P. Under the first head came important changes in the methods of manufacture, removal of dust and fumes, and substitution of mechanical for hand work. The medical supervision seems to have been very thorough, and the physician was always assisted by a laboratory technician who carried on routine Derrien tests. The workmen were provided with full suits of working clothes, including underwear, with wooden *sabots* and ankle pieces to prevent the dust from entering at the ankles. Abundant washing facilities were provided, and every effort made to make the men use them. In some places it was found possible to make the men bathe by paying an additional sum to the clean men. In another, it was necessary for the men actually to pass through a stream of warm water nearly up to the waist, with a shower going above in order to get to their street clothes. The results of these activities have been satisfactory and, while the records do not give the number of men exposed to the poison, a comparison can be made between the number of deaths per ten thousand manufactured tons in the year before these reforms were instituted with the number in the year following.

Period	Deaths	Tons of D.N.P. and Mixture D.D. Manufactured	Deaths per 10,000 Tons
May, 1916, to May, 1917 ...	31	19,100	16.3
May, 1917, to May, 1918 ...	5	40,700	1.2

Picric acid was the favorite explosive in pre-war times but as the main supply was obtained from Germany, a new industry had to be built up. No serious effects were observed among the picric acid workmen and no cases of serious illness. Experiments showed that it required fully five times as much T.N.P. as D.N.P. to produce symptoms in guinea pigs. So little danger was there in the T.N.P. branch that it was used as a resting place for men who had to be taken away from contact with D.N.P. Mixed explosives were found to be dangerous in proportion to their D.N.P. content.

Trinitrotoluene was less used among the French than in England and America, although a good deal was made and loaded into shells. The operatives were no more cleanly than the English and Americans, yet in France the manufacture of T.N.T. is considered essentially safe. Only two cases of fatal toxic jaundice have been recorded and although it is possible that some may have been missed in the confusion of a war industry, the inquiries set up by the authorities in the case of death in a munition worker were very rigid. What is more significant is that the French insist that there was very little disability from T.N.T. sickness with loss of time among the workers, so that it was not considered necessary to have alternation of employment or special medical investigations. They believe that their method of purification by the use of sulphite, which removes the other isomers and tetranitromethane, is responsible for their escape from the troubles encountered in England and in the United States. Dr. Perkins notes in this connection the fact that since they have used sulphite purification in England there are far fewer cases of intoxication.

The results obtained in these various investigations led to a further series of studies of the various bodies used in the manufacture of explosives and the by-products, the two points studied being the minimum fatal dose and the relation of intoxication to vasomotor phenomena. It was found that the oil of dinitrotoluene and of dinitroxylene and the oils of trinitrated xylite are toxic. The fatal dose for the dog was for the first two, 0.5 gram per kg., for the last, 0.2 gram per kg. They produce important lesions of the liver and kidneys, have no vasodilating effects analogous to those of nitroglycerine, and their vapors when inhaled do not lead to a fall of arterial pressure. The chlor- and nitrochlorbenzenes are clearly less toxic than the nitrotoluenes, anisols and phenols. The most toxic compound of all is dinitrophenol 1–2–4, next the corresponding isomer of dinitranisol, then follow trinitrophenol, trinitranisol and dinitrotoluene 1–2–6, while the least toxic is chlorbenzene. — Alice Hamilton.

OCCUPATIONAL AFFECTIONS OF THE SKIN AND SPECIAL SENSES

Occupational Cancer. *D. Glibert.* Bull. Acad. Med. Belgique, May, 1919, 29, No. 4, 627–634. — The writer relates the British researches and regulations about the pitch and coal-agglomerates industry. He shows that coal dust, naphtalin, creoline, and analin dyes do not produce any kind of skin phenomena. Certain kinds of pitch are also innocuous. If we have to reconcile the theory of arsenic poisoning with these facts, we must admit that the harmfulness does not lie in arsenic itself, but in the formation of some kind of arsenic compound which would be productive of cancer.

The author reminds us that H. C. Ross of the London Lister Institute did not find arsenic in pitch, and supposes that it contains some auxetic and kinetic substances which would be made harmless by adding a small proportion of formaldehyde. — René Sand.

Prophylaxis of the Pitch Disease. *M. Herman.* Bull. Acad. Med. Belgique, May, 1919, 29, No. 4, 599–606. — The writer describes the industrial preparation of pitch and of coal agglomerates. The pitch is reduced to small pieces with the pickax and transported to the grinding machine on a wheelbarrow. The ground pitch is mixed with coal dust, treated by steam and pressed into brick or egg-shaped agglomerates.

The only parts of the process which give rise to skin irritation are the crushing and grinding of the pitch, the pitch dust evidently being responsible. Pitch disease, tar disease and chimney-sweepers' disease are the same thing. There must be a common substance producing in those three classes of workers the same skin phenomena, which include boils, acne, eczema, warts and cancer.

Microscopic examination shows that the pitch particles are sharp, so their physical action is not negligible.

Prophylaxis must aim at preventing pitch dust from reaching the worker, which may be realized either by masks and special garments, or by crushing and grinding the pitch in closed machinery. — René Sand.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

The National Safety Congress. Am. Arch., Nov. 5, 1919, 116, No. 2289. — This is a brief discussion of the meeting of the National Safety Congress held in Cleveland, Ohio, October 1 to 4, followed by an abstract of Mr. Dresser's paper on *Co-operating on Safety.* — G. M. Fair.

Intensive Production and Accident Risks. Engin., Nov. 7, 1919, 108, No. 2810, 619–620. — The inauguration of the safety-first movement is believed to be responsible for the fact that despite the intense industrial activity, the hazard of lighting restrictions, the large numbers of persons employed

in dangerous industries, and the introduction of large numbers of "dilutees" into the working forces, the number of accidents recorded in some areas of Great Britain in 1918 was actually less than in 1914. This was notably the case in the Midlands where the total number of accidents reported was 35,706 in 1914; 29,556 in 1917, and 28,699 in 1919. This reduction is even more remarkable because there has been a steady tendency of late to class and report as accidents mishaps which in former years would have been regarded as insignificant incidents. But, although the total number of accidents was remarkably low, the proportion of serious or fatal casualties was higher than in pre-war times. There were 1,579 fatal accidents out of a total of about 164,000. Of this total about two-thirds were of a kind which would not be affected by regulations for fencing or other safeguards, and of the residue only a small fraction were attributable to the lack of preventive measures. The great majority of the accidents have arisen from the recklessness or ignorance of the operatives. For this reason some firms have organized safety committees consisting of representatives of the management and the men. By this arrangement and others of a similar character, one firm succeeded in reducing the number of accidents by 50 per cent. in the course of a single year.

Lead poisoning in Great Britain has dropped from 1,058 cases in 1900 to 144 in 1918, but the output was only 60 per cent. The manufacture of T.N.T. gave rise to 189 cases of poisoning in 1917, this number being reduced to thirty-four in 1918. Other interesting advances in accident prevention and health conservation have been made. — G. M. Fair.

Safety Engineering Reduces Cost of Construction. Engin. N.-Rec., Nov. 13–20, 1919, 83, No. 19, 864. — Accident prevention has proved highly profitable in the construction operations of the E. I. DuPont de Nemours Co. General statistics of expenses and savings due to accident prevention on two of these operations are given in a paper by F. L. Hurlbutt, safety engineer, before the construction section of the National Safety Council. During the period of organization of a department of safety the lost-time rate had steadily increased to 2.27 days lost per men per year. One month after safety activities had been begun in earnest this figure was reduced to 1.28 and in the following months to 0.744, 0.744, 0.684, 0.351, 0.441, and 0.216 respectively. The net saving effected by this control of accidents was $336,651, while the cost of maintaining the department was $50,000. — G. M. Fair.

Accident Prevention and Safety First. *Gerald Bellhouse.* Great Britain, Ann. Rep. Chief Inspect. Factories and Workshops for 1918, pp. 13–22. — Notices were received of 1579 fatal accidents, of 53,491 machinery accidents and of 108,663 non-machinery cases. These figures represent enormous economic loss, and ways and means are considered for producing safer working conditions. These may be secured through regulations, trade agreements, safety committees, safety inspectors, and safety-first campaigns. Analysis of accidents to show in what manner they occurred is important. — Barnett Cohen.

Use of Electricity in Factories. *G. S. Ram.* Great Britain, Ann. Rep. Chief Inspect. Factories and Workshops for 1918, pp. 57–64. — In spite of the increased use of electrical power, there has been a reduction in the number of accidents due to electricity, though fatalities are somewhat increased. The importance of artificial respiration as a means of resuscitation in cases of apparent death from electrical shock is emphasized. — Barnett Cohen.

INDUSTRIAL SURGERY

Disability Following Injuries to the Back in Industrial Accidents. *James Warren Sever.* Jour. Orthop. Surg., Dec., 1919, 1, No. 12, 743–751. — A continuation of the article in the previous number of the same journal and abstracted in Industrial Hygiene, 1919, **1**, 148. This number contains tables of data on the cases discussed by Sever in the previous article. — C. C. Lund.

FATIGUE AND OCCUPATIONAL NEUROSES

The Problem of Fatigue. *Leonhard F. Fuld.* Ind. Management, Nov., 1919, 58, No. 5, 417–418. — The writer points out the value of proper nourishment in eliminating the drop in the production curve which manifests itself at different times of the day. He recommends that some simple form of nourishing food be provided during a mid-morning or mid-afternoon rest period. Excellent results have been obtained from milk, ice-cream, and soups. He also calls attention to the necessity for making available to workers for the mid-day meal nourishing food which can be obtained as an inexpensive supplement to lunches which they carry. — C. H. Paull.

Hours of Work. *R. E. Graves.* Great Britain, Ann. Rep. Chief Inspect. Factories and Workshops for 1918, pp. 2–12. — A detailed presentation of instances in British industrial plants of changes and reductions in hours of work and the resulting effect on output and morale. The general attitude of employers and workers is favorable to the changes made. Output has been maintained in many plants,

but not in all. Time-keeping has been vastly improved as a result, probably, of the better health enjoyed under the new conditions. The scheme for a five-day week does not seem to have worked out satisfactorily where tried. — Barnett Cohen.

Labour-Saving Appliances. *G. S. Taylor.* Great Britain, Ann. Rep. Chief Inspect. Factories and Workshops, for 1918, pp. 23–27. — Extensive introduction of labor-saving devices in Great Britain has been due mainly to (1) the advent of women into many industries; (2) the necessity for economy of manual labor; (3) quantity production of articles the same size and of a form (like shells) which readily lends itself to simple mechanical methods of handling and transport. Many devices used in a number of industries are described from the standpoint of their efficacy in saving labor and reducing fatigue. — Barnett Cohen.

HAZARDS OF COMPRESSED AIR, DIMINISHED PRESSURE, GENERATION AND USE OF ELECTRICITY, AND ELECTRICAL WELDING

Mask and Protecting Garment for Welders. *Cammell Laird and Company.* Rev. d'hyg., July, 1919, 41, No. 7, 692–693. — Description of a protective mask with attached apron, used by the electric welders in a British shipbuilding establishment. — Wade Wright.

HEAT, COLD AND HUMIDITY

Air Control and the Reduction of the Death Rate after Operations. *Ellsworth Huntington.* Mod. Med., Oct., 1919, 1, No. 6, 463–468. — This paper discusses the correlation between various ailments and the humidity, temperature and variability of air. The optimum conditions for health and disease, and their effect on patients during and following operations, and on death rate are emphasized. — A. B. Emmons.

WOMEN AND CHILDREN IN INDUSTRY

Women Physicians and Women's Health. Survey, Nov. 15, 1919, 43, No. 4, 110–111. — This article contains the resolutions adopted by the First International Conference of Medical Women. Among the noteworthy recommendations of these resolutions are those advocating that greater emphasis be placed upon the function of the physician in preventing disease; that maternity insurance be provided; that both children and adults should avail themselves of periodic physical examinations; that workers be provided with accident and sickness insurance; and that provision be made for sex education under appropriate conditions. — C. H. Paull.

The Enforcement of International Labor Standards Relating to Child Labor. *W. N. Swift.* Proceedings of the Academy of Political Science, July, 1919, 8, No. 3, 100–102. — The adoption of international standards might compel our government to enter more seriously upon the work of education. Under state provision there is still a very unsatisfactory condition in regard to child labor and still great deficiency in provisions for continuation of the education of children who enter employment at the legal age. As the child labor law now stands, it is not at all certain that the national government can prevent even an inhumane exploitation of childhood or can enforce any proper standards. In North Carolina, for instance, children may still be employed eleven hours in a day and as late at night as 9 o'clock. — G. E. Partridge.

Westchester, What an American County Can Do. *Winthrop D. Lane.* Survey, Nov. 22, 1919, 43, No. 5, 140–143. — In discussing the unique work of Mr. V. Everit Macy as Commissioner of Charities and Corrections, the writer shows how effectively the work of the county psychiatric clinic has been co-ordinated with the care and placement of children in Westchester County. — C. H. Paull.

INDUSTRIAL SANITATION: ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

The Pollution of the Atmosphere. Engin., Nov. 14, 1919, 108, No. 2811, 656–657. — The British committee charged with the investigation of atmospheric pollution have published their fourth report, together with the results of observations made in the year 1917–1918 at twenty-four selected stations in Great Britain. At Newcastle-on-Tyne the mean monthly deposit of the solids contained in the atmosphere was 20.81 metric tons per square kilometer. At Malvan the solids amounted to only 2.51 tons. Both stations increased the deposit in the summer months of 1916–1917 and diminished it in

the winter months. Generally there was a tendency at all stations for this to occur, but London showed an improvement in both winter and summer. It is important, however, to note that the sources of pollution differ considerably in the two seasons — in summer, dust forms the preponderating share; in winter, dust from fuels is the greatest source.

The deposit of carbonaceous matter was less during the summer months; insoluble ash showed a great increase during the summer and a slight increase in the winter. Sulphates mainly derived from combustion products decreased in summer and increased in winter; chlorine deposit was the same for both seasons. Malvan had the lowest deposit of all elements of pollution, and, curiously enough, the second lowest in seven cases out of nine was Wandoworth Common, London. — G. M. Fair.

Atmospheric Pollution. Science; Nov. 28, 1919, 50, No. 1300, 501. — This is an abstract of the fourth report of the British Advisory Committee on Atmospheric Pollution. — G. M. Fair.

The Relative Sanitary Values of Different Types of Drinking Fountains. Part I. The Results of Tests of Vertical-Nozzle Types. *Louis V. Dieter.* Am. City, Nov., 1919, 21, No. 5, 452–457. — After nine or ten years of uninterrupted popularity, the bubble fountain was found upon investigation to be a menace to the public health fully as much as the common drinking cup. Mr. Dieter, who has made very complete laboratory tests upon a great many types of so-called sanitary drinking fountains, gives the results of his experiments in this paper. His experience with the vertical-nozzle type fountain shows that none of the more or less intricate internal arrangements for swirling the water or allowing it to come from the nozzle in various fancy ways will protect the drinker, unless the guards are so constructed that it will be impossible to touch the nozzle either with the mouth or with the fingers, and unless it is equally impossible for drippings from the mouth to fall back on the nozzle. None of the fountains examined possessed these features. — G. M. Fair.

The Essential Features of Sanitary Plumbing Fixtures. Am. Arch., Oct. 22, 1919, 116, No. 2287, 535–537. — This article discusses in detail the construction of plumbing fixtures and their placing in buildings. The weak links of present practice are pointed out and improvements are suggested, notably for the connection of earthenware floor fixtures to the drainage system. — G. M. Fair.

MEDICAL DISPENSARIES AND HOSPITALS IN INDUSTRIAL PLANTS

Keeping Workers Well. Factory, Dec., 1919, 23, No. 6, 1316–1326. — Pages 1324 and 1326 of this collection of short contributions contain three suggestions of ways by which convalescent workers can be given duties in keeping with their physical condition. Among such duties are light work around the plant, and work which they can do in their homes. Not only does this make the man a producer again, but it frequently helps him through a period of inactivity when discouragement is apt to overcome him. — C. H. Paull.

INDUSTRIAL, PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

Town Planning in Relation to Industrial Development. *C. W. Kirkpatrick.* Canad. Engineer, Dec. 11, 1919, 37, No. 24, 524–525, 531–532. — The industrial commissioner of Hamilton, Ontario, believes that housing and working efficiency go hand in hand; indeed, that a study of the housing of the particular labor in which the manufacturer is interested will enable him to decide whether he will be able to obtain efficient labor or not. It is quite possible by logical planning for an industrial city to be both beautiful and comfortable. — G. M. Fair.

City Hygiene in Relation to Employment. *W. J. Howarth.* Jour. Roy. San. Inst., June, 1919, 39, No. 4, 133–142. — The author points to the large number of physically subnormal persons in large cities. Some of the causes discussed are atmospheric pollution with street dust and gases, sedentary occupations, lack of exercise and inadequate ventilation of rooms. These conditions result in absence from work and reduced capacity, if not severe illness. Street disinfection is at present a *placebo*. Flushing of streets and the substitution of gas and electricity for coal are suggested as means of improving the air. Factory conditions are faulty, largely through carelessness of those responsible for cleaning and ventilating, although some structural defects exist.

The increased employment of women and young persons requires increased attention to sanitation. Persons newly entering city work fail to assume suitable, dry attire and to eat proper meals; they adapt themselves with difficulty to monotonous labor. Education through publicity under expert dietitians and hygienists should furnish the needed knowledge. A common room and suitable recreation would help solve the problem of monotony. The sanitary problems created by restaurant kitchens, especially basement kitchens, underground workrooms, lock-up shops and kiosks are discussed. — A. B. Emmons.

France's First City Planning Law. *Frank Backus Williams.* Nat. Munic. Rev., Oct., 1919, 8,

No. 8, 535–537. — A brief review and discussion of the recently enacted municipal planning law of France. The writer compares this law with similar laws in other European countries. Among the important features of this law are its provision for the consideration of health and artistic elements in city plans which communities shall draw up for approval. — C. H. Paull.

Hygienic Survey of the Garden City of Staaken near Spaudau. *Johanna Nitsch.* Ztschr. f. Hyg. u. Infektionskrankh., 1919, 88, No. 3. — An illustrated article giving a description of a newly constructed residence community built by the state for workers in the war industries of Spaudau. The village is entirely residential. The ground was secured, the village laid out and the houses, etc., built by the "Reichsamt des Innern" and then turned over to an association of householders which pays a 2 per cent. rental to the state. Each holder subscribes to shares to the value of 300 marks, which may be paid in monthly installments, and pays a monthly rental of from 22 to 45 marks. Sixty-five per cent. of the holders must be government employees.

The village is built at present to accommodate 846 families, or 3500 persons, with an allowance of 300 extra roomers. The houses are, in the main, well planned and the village well laid out and is considered as a distinct advance in industrial housing. A number of details are found faulty, however, and some are severely criticized. There are 298 single houses built in rows and 146 apartment houses containing accommodations for three or four families. Each tenant has a garden space, usually in the rear of his house, of 100 to 200 square meters. There is a central water supply with running water for each house, and a general sewage disposal plant of settling tanks for the entire village. There are two schools, several stores and an unfinished church. Houses are one or two stories with rooms $2\frac{1}{2}$ meters high. They are lighted with electricity and heated by porcelain or iron stoves, with porcelain stoves or gas stoves for cooking. Single houses have a kitchen, washroom, storeroom, and two bedrooms; apartments have a kitchen, two bedrooms and a washroom for every four apartments. Bath tubs are supplied in the houses but are little used for the purpose for which they are intended. The kitchens are used as family living rooms. The principal criticisms are as follows:

Some streets are too wide for small houses, thereby wasting land, producing too much dust, requiring too much care, and being poorly lighted at night.

The trees are planted too close to the houses.

There is an absence of seats or benches in front of the houses, and an entire absence of provision for children's playgrounds, with the result that the streets are used for this purpose.

There are no curbs, no gutters for rain water, and no sidewalks, making some of the houses virtually islands in heavy rains.

The absence of cellars under about one-half of the single houses results in many damp rooms.

There is poor lighting in many rooms and in others the windows are arranged to give light but do not furnish sufficient ventilation. — H. F. Smyth.

California's Labor Camps. *Christina Kryst.* Survey, Nov. 8, 1919, 43, No. 3, 70–78. — An excellent account of the activities of the California Commission of Immigration and Housing in changing conditions in labor camps. The writer calls attention to conditions which have existed quite generally in the past in labor camps in California. As an instance, she cites the case which developed into the Wheatland hop-field riots in 1913. On the ranch where these riots developed, men, women and children were living practically in the open. Disease spread as a result of almost complete lack of sanitary provisions; even wholesome drinking water was very scarce. The Commission from its creation in 1913 developed its work primarily as an educational project, and while its activities were later given greater legal support, the aim of "selling" its work to ranch owners and to workers has never been lost sight of.

Up to the present time the Commission has been able to establish in permanent, temporary, and community labor camps conditions of housing and sanitation which have not only tended to stabilize labor but which have raised the social standards of many of the labor camps. Rain and fly-proof tents or living houses, sanitary toilets, shower baths, and an awakened interest in education and wholesome entertainment followed in the wake of the Commission's representatives. — C. H. Paull.

INDUSTRIAL MANAGEMENT IN ITS HEALTH RELATIONS: SPECIAL TESTS IN THE SELECTION OF EMPLOYEES

A Classified Scale for Measuring Intelligence. *C. W. Washburne.* Jour. Educational Psychology, Sept., 1919, 10, No. 7, 309–322. — The writer of this paper has tried to overcome the failure of the current intelligence tests to indicate special deficiencies and abilities, by grouping the tests of the Stanford revision of the Binet system according to the predominant function or functions used in passing them, thus making the scale specifically diagnostic as well as a measure of general intelligence. The procedure and scoring are identical with those of the Stanford method, so that the intelligence quotients found are comparable with the standards in use. The tests have been arranged in seventeen groups, the rubrics following a practical rather than a strictly analytical grouping. Details are given for scoring. The writer maintains that sufficient trial has been made of the method to show that by it one can readily detect special qualities of intelligence. — G. E. Partridge.

A Preliminary Report of Some Group Tests of General Intelligence. *Frances Lowell.* Jour. Educational Psychology, Sept., 1919, 10, No. 7, 323–344. — Although these tests are especially adapted for use with children, the paper contains some relevant discussion of the general use of group tests. Some of the tests used have been selected from those of Binet, Kuhlmann and Terman; the others are new. Their main purpose is to serve as a means of selecting cases of doubtful mentality to be subjected later to individual examination. — G. E. Partridge.

An Abbreviated Mental Age Scale for Adults. *E. A. Lincoln* and *K. M. Cowdery.* School and Society, Dec. 13, 1919, 10, No. 259, 707–709. — The abbreviated mental age scale described here was devised to meet special requirements found in examining men in the army. Thirteen tests were selected from the Stanford series which were believed to have greater diagnostic value than the rest. By the use of this series the examiners were able to double the number of their examinations. The writers suggest that their method may be useful in the application of intelligence tests to industrial groups in cases where rapid individual examinations seem desirable. Tables are presented showing results by these tests as compared with the results according to the Stanford series. — G. E. Partridge.

INDUSTRIAL SERVICE AND MUTUAL BENEFIT ASSOCIATIONS

Adult Recreation. Playground, Dec., 1919, 13, No. 9, 414–420. — The experiences of War Camp Community Service and other national and local agencies in developing recreational and social activities during the war period have re-emphasized the value of recreation for adults and have suggested new possibilities. The article contains a useful outline of community recreations and of both outdoor and indoor recreations for adults, with a special list of activities for adults in rural communities. — G. E. Partridge.

Outdoor Industrial Theatres. *Constance D'A. Mackay.* Playground, Dec., 1919, 13, No. 9, 433–437. — To plan recreation for our foreign-born workers in great industrial cities is a difficult and important problem. One solution is the outdoor industrial theatre, established in the center of each foreign section. The cost of these theatres is very small, even if permanent structures are built. Some practical details are given, and the bearing of the subject upon the problem of the Americanization of the foreign population is discussed. — G. E. Partridge.

Recognizing the Commercial Value of Music. National Association of Corporation Schools Bulletin, Sept., 1919, 6, No. 9, 399–404. — This study, made by questionnaire by the director of the National Association of Corporation Schools, reports returns from eighty companies, all nationally prominent. Of these, sixty-three maintain a musical, dramatic, dancing or other form of social organization; twenty-three have choral societies; thirty-one maintain bands; and twenty-two have orchestras. Dancing and dramatic clubs come next in interest among the industrial recreational enterprises. Six companies occasionally feature moving pictures, and about as many support literary and debating societies. There is almost unanimity of opinion in regard to the value of each of the forms of recreation mentioned. More attention is given in the paper to the question of support of recreations than to the hygienic aspects of the problem, but the discussion is suggestive. — G. E. Partridge.

WORKMEN'S COMPENSATION AND INSURANCE

The Explosion of Chemicals. I. Common Law Liability. *Chesla C. Sherlock.* Abstracted from Chem. Met. Eng., 1919, 21, 83–84, by C. E. Munroe in Chem. Abstr., Sept. 10, 1919, 13, No. 17, 2129. — "The legal liability of an employer for injuries caused to his workmen by explosions of chemicals with which they are required to deal must necessarily divide itself into two classifications: (1) common law liability and (2) workmen's compensation acts. . . . The principles which apply under the common law are stated and illustrated by many citations from specific cases." — W. O. Fenn.

The Explosion of Chemicals. II. Workmen's Compensation Acts. *Chesla C. Sherlock.* Abstracted from Chem. Met. Eng., 1919, 21, 131–132, by C. E. Munroe in Chem. Abstr., Oct. 10, 1919, 13, No. 19, 2448. — The origin of the compensation acts as a result of abuses of common law liability is described and the underlying principles are defined. "The accident causing the injury must arise out of and in the course of employment. The workman is not entitled to compensation if the accident results from his serious and wilful misconduct, his meddling with work which is not his own, horseplay, or the malicious intent of another." — W. O. Fenn.

ABSTRACT OF THE LITERATURE

OF

INDUSTRIAL HYGIENE

VOLUME I MARCH, 1920 NUMBER 11

CONTENTS

	PAGE
General	169
Systemic Occupational Diseases: Occurrence, Treatment and Prevention	172
Poisonous Hazards and Their Effects: Gases, Chemicals, etc.	173
Dust Hazards and Their Effects	173
Occupational Infectious Diseases: Occurrence, Treatment and Prevention	173
Occupational Affections of the Skin and Special Senses	174
Occurrence and Prevention of Industrial Accidents	175
Industrial Surgery	176
Fatigue	176
Women and Children in Industry	177
Industrial Sanitation: Illumination, Ventilation, Heating, Water Supply, Sewage Disposal	178
Industrial Nursing	180
Industrial Personal and Community Hygiene: Housing, etc.	181
Industrial Investigations and Surveys	181
Industrial Management in its Health Relations: Special Tests in the Selection of Employees	182
Industrial Service and Mutual Benefit Associations	183
Industrial Health Legislation and Court Decisions: Malingering	183
Workmen's Compensation and Insurance	185
Industrial Mortality and Morbidity Statistics	186

GENERAL

A COMMENT ON THE QUESTION OF SPREADING THE KNOWLEDGE OF HYGIENE AMONG THE PUBLIC. *Springer.* Deutsch. med. Wchnschr., Oct. 2, 1919, 45, No. 40, 1112. — In the new legislation regarding workmen's councils, it is provided that they shall combat industrial accidents and diseases by giving suggestions, advice and encouragement, and if necessary by process of law. They are also given a hand in altering the factory regulations and in introducing new processes when desirable. These workmen's councils will be in a much better position to observe and to enforce safety regulations than are factory inspectors; but they should include a few doctors, and the lay members should have instruction in industrial and general hygiene. To provide this instruction, some of the mining companies are providing special courses for the members of the council, not only upon the hazards of that particular industry but also upon general health measures. — T. J. Putnam.

THE HEALTH PROBLEM FROM A NEW ANGLE, *J. F. Williams.* Educational Review, Jan., 1920, 59, No. 291, 46–57. — "Because man is to be considered as evolving toward a more rational life in which no instinctive urge will achieve the usual, the traditional and static responses, the whole health problem must be reconsidered and approached from a new point of view. The history of hygiene shows how stupid and awkward we have been. We have thought to deal with personality by tooth-brush drills and medical inspection, by prophylaxis and punishment, when the very source of all hygienic action, so far as meeting the crises of life is concerned, was the conscious and motivated intelligence of the individual. The problems of health in the individual cannot be met by mere checks on disease alone, or by information on the dangers imminent; indeed, national health presents the same situation. There must come virile motives for attaining a fine end, motives that are rationalized and conscious.

For some time, perhaps always, there will be need for adequate machinery in government to accomplish certain state and regulatory procedures." — G. E. Partridge.

For the Health of the Holy Land. *I. M. Rubinaw.* Survey, Nov. 29, 1919, 43, No. 6, 175–178. — The writer gives an account of the work of the American Zionist Medical Unit in establishing medical service in various parts of Palestine. Through the untiring efforts of the organization of which he is the director, order is gradually growing out of the chaos of ruin and disease which the war left in its wake. By the end of April, the unit was operating hospitals in Jerusalem, Jaffa, Safed, and Tiberias with clinics in these cities and in Haifa, Hebron, and Jericho. One of the interesting features of the activities of the American Zionist Medical Unit is that, because of its ability to render service to all classes, it has paved the way for the extensive development of socialized medical service in Palestine. — C. H. Paull.

Why Overhauling of the Human Machine is Necessary. *S. D. Hubbard.* Month. Bull., N. Y. City Dept. Health, Nov., 1919, 9, No. 11, 262–271. — The author urges that the same attention which we give to perfection of the industrial machine be devoted to the attainment of an equal degree of perfection in the human machine. To produce the highest degree of efficiency which may be secured from the human machine, the following suggestions are offered: Applicants for employment must be carefully examined with a view to the type of work to be performed; workers must be supervised, not only to detect loafing or vicious habits, but also to see that they are efficient and that the labor is not causing wear or maladjustment of the human machine. The above policy would promote production as a result of the reduction of human sickness and misery.

A table is appended showing the industrial field examined, the individuals held on probation, the exclusions for infectious diseases, and all other diseases detected. — L. A. Shaw.

Sickness Records for Industrial Establishments. U. S. Pub. Health Ser., Pub. Health Rep., Nov. 14, 1919, 34, No. 46, 2593–2604. — Neither the factory manager, employees' organization nor public health agency are able to control or prevent disease unless the records of the conditions conducive to sickness are kept, not intermittently, but continuously.

Industrial establishments, employees' organizations, and public health agencies have spent large sums of money on general principles and on wholesale sanitation; whereas all such activities should be based upon definite information and regarding the where, when and how of disease occurrence.

A practicable standard plan for reporting and recording sickness was presented by a special committee to the American Public Health Association in October, 1918. With the assistance of this committee and of others, two plans for the recording and reporting of disease prevalence among workers were finally formulated. These plans are herewith presented, with an invitation from the Public Health Service to all industrial establishments or employees' sick benefit associations to correspond and cooperate with the Statistical Office. — L. A. Shaw.

Defects Found in Drafted Men. *C. B. Davenport* and *A. G. Love.* Scientific Monthly, Jan., 1920, 10, No. 1, 5–25. — The study is based upon data recorded in the office of the Provost Marshal General and the Surgeon General of the Army. A complete survey of the defects in the American population would be of importance for many interests; among its services would be that of giving insight into the suitability of the population for the various occupations which our social organization requires. In the total population examined during the war (2,740,000 men), 468 men in every 1000 were found to be defective. Of the defects found, 39 per cent. were of a mechanical nature, defects of bones and joints, and the like; 12 per cent. were of the sense organs; 11 per cent. were from tuberculosis and venereal diseases; 10 per cent. were from cardio-vascular diseases; 10 per cent. were defects of developmental and metabolic processes; and 6 per cent. were nervous and mental defects. There were more than 300,000 cases of weak feet, and more than fifty men in 1000 were found with hernia. Of the nervous and mental defects, mental deficiency was most frequent, being discovered in 40,000 men by the medical examiners — many more being found subsequently by the psychologists. In all, about 12 per cent. of the men examined were rejected for all military service.

The larger part of the article (which is to be continued) is devoted to a study of the geographical distribution of defects. There are seventeen maps, presenting the exceedingly interesting and important results of the study. — G. E. Partridge.

The National Importance of Scientific and Industrial Research. *G. E. Hale, E. Root, H. S. Pritchett, T. N. Vail, A. Swasey, A. W. Mellon, G. Eastman, W. Douglas, J. R. MacColl, H. E. Howe.* Bulletin of the National Research Council, Oct., 1919, 1, No. 1, 1–43. — These papers emphasize the fact that throughout the civilized world the national importance of science and research is appreciated as never before. Many tendencies of the time indicate both the opportunity and the necessity for further effort. There is not a little pseudo-science. Many industries are conducted on purely empirical lines without the enormous advantages that scientific methods would bring. There is need of organization, of a high standard of scientific research, and of a closer and more fruitful relation between the research man in the university and the industrial plant. It is pointed out that the work of the scientist has in some cases already made it possible for thousands of men to produce a quality of work that only a few years ago could be reached only by a few especially trained individuals — one instance being the development of the pyrometer. The

longest paper in the series, by H. E. Howe, is a summary of reports on the organization of scientific and industrial research at home and abroad. — G. E. Partridge.

Draft Conventions and Recommendations Adopted by the International Labor Conference of the League of Nations. Am. Labor Legis. Rev., Dec., 1919, 9. No. 4, 529–538. — See also The New Labor Code of the World, Survey, Dec. 20, 1919, 43, No. 8, Section II; and International Labor Conference Draft Conventions, Recommendations and Resolutions, Am. Industries, Dec., 1919, 20, No. 5, 21–23. — Of the three articles mentioned, the one in the Survey includes a list of the names of the delegates with their status. Article II of the draft convention limiting the hours of work in industrial undertakings provides for an eight-hour day with a forty-eight-hour week. Exceptions to this provision are enumerated in Articles III and following.

The draft convention concerning the employment of women before and after childbirth excludes women from employment during the six weeks following confinement, and gives them the right to leave work six weeks prior to that time. Women are also to be provided with maternity support.

Two of the draft conventions prohibit night work for women and for young persons under 18 years of age except in certain specified instances.

A minimum working age for children of 14 years is established in another convention.

Special recommendations are made regarding employment where the worker is exposed to industrial poisoning or disease.

The six draft conventions of the International Labor Conference are subject to ratification by the nations within the International Labor Organization. The recommendations are submitted with the view that they will be considered in connection with national legislation. — C. H. Paull.

The International Labor Conference at Washington. Am. Industries, Dec., 1919, 20, No. 5, 12–20. — This is a brief account of the proceedings of the conference showing, day by day, the business transacted. For those desiring to inform themselves concerning the reasons for specific clauses in the conventions, recommendations, and resolutions as finally adopted, the brief reports of discussions will be found helpful. — C. H. Paull.

Capital Gets a New Director. *E. Wildman.* Forum, Dec., 1919, 539–550. — This is a popular account and discussion of the movement made by the Procter and Gamble Company toward democratization of their business by accepting on the board of directors a representative elected by the employees. "It was the first time in American industry that the employees, whether stockholders or not, were able to secure the direct representation of one of their number on the board of directors of a concern for which they worked." — G. E. Partridge.

The Constitution of the German Republic and the Medical Profession. *Otto Mugdan.* Deutsch. med. Wchnschr., Aug. 28, 1919, 45, No. 35, 973–974. — The constitution adopted by the National Constitutional Assembly is divided into two parts. The first deals with the structure and administration of the nation, the powers of the Reichstag and Reichsrat, of the president, and so forth. The second defines the fundamental rights and duties of the people. Many powers and privileges are transferred from the several states (Länder) to the national government; postal and telegraph systems, and many railroads and canals are nationalized. The federal government is empowered to oversee the execution of its laws by the local officials, and to supplement or supplant these officials with its own, if necessary.

The nation has, among other things, legislative power over repopulation, mothers' and children's welfare, public health, and traffic in provisions and public utilities. These are affairs which so far have been largely under local control. The necessity for the establishment of a national health service is a result of the need for greater efficiency and economy, and it is only a question of time when medical service will be entirely administered by the federal government.

The two legislative bodies, the Reichstag and the Reichsrat, are mutually limited, and both are further limited to some extent by the president's decisions. This rather complicated organization makes the need for a centralized ministry of health all the more pressing, in the first place as an impartial advisory body on public health matters, and in the second as an institution that can act quickly in time of need without waiting for legislative action.

Honorary titles, orders, and medals, with the exception of those conferred for services during the war, are forbidden in medicine as elsewhere. — T. J. Putnam.

Disciplinary Problems of the Army. *Herman M. Adler.* Ment. Hyg., Oct., 1919, 3, No. 4, 594–602. — At the outbreak of the war it was estimated that an army of 3,000,000 men would require provision for about 50,000 prisoners at the Disciplinary Barracks. Instead, only 5,000 prisoners were received, or 10 per cent. of the estimated number based on previous experiences. This can be explained on only two grounds: first, the enforcement of prohibition; and second, the elimination, through the work of the neuropsychiatric officers, of low-grade defectives and psychopathic men before they really entered the military service. — S. Cobb.

Disciplinary Problems of the Navy. *A. L. Jacoby.* Ment. Hyg., Oct., 1919, 3, No. 4, 603–608. — "If the navy is regarded as a large organization, with a definite function to accomplish, then it behooves us to conserve the usefulness of the members of the organization as far as possible, for the benefit of the navy, and eliminate those who are a constant expense. From the cases we have studied we find that about 50 per cent. of them are men of whom it

was easily demonstrable that they were either nervously or mentally not fit for the service, and as two-thirds of our cases are men who find themselves in the Naval Prison less than one year from the date of their enlistment, it is reasonable to suppose that these men were also unfit when they enlisted. Therefore, the best single point of attack to the navy's prison problem is at the recruiting office, and it falls upon the shoulders of the medical officer. Unfortunately, our state of knowledge is not so perfect that we can eliminate delinquents at the recruiting station by means of a yard stick or other instrument of precision, but the taking of a short social and medical history at the recruiting station will eliminate most of the undesirable types." — S. Cobb.

A New School for Managers for our National Industry and our Commerce in France and Abroad. *H. Schoen.* Revue internationale de l'enseignement, Jan.–Feb., 1919, 73, 66–73. — Describes a special school of commercial and administrative sciences recently established. — G. E. Partridge.

Continued Education. Journal of Education and School World, July, 1919, 51, No. 600, 436. — The Labor Party's Advisory Committee on Education (England) has recently issued a booklet dealing with the subject of "continued education," as provided for by the new Education Act. The primary object of the new continuation schools should not be, the Committee insists, to impart specialized industrial and commercial education, but to give boys and girls a general education. — G. E. Partridge.

Is the Long Summer Vacation Necessary? *H. J. Fenton.* Educational Review, Jan., 1920, 59, No. 1, 41–45. — The writer doubts that the long vacation, now almost universal for educational institutions, is necessary, and points out the fact that no other institution is conducted on this plan. Two schools, the Naval Academy and the Military Academy, are practically all-the-year-round schools, having an intensive life at all times, and yet maintaining a high standard of health and efficiency. — G. E. Partridge.

SYSTEMIC OCCUPATIONAL DISEASES: OCCURRENCE, TREATMENT, AND PREVENTION

MENTAL

General Psychopathology. *E. E. Southard.* The Psychological Bulletin, June, 1919, 16, No. 6, 187–199. — This is a summary of recent literature on the psychoses and neuroses of the war, with special reference to shell shock. A bibliography of forty-five titles is included. — G. E. Partridge.

Mental Defect in a Southern State. *V. V. Anderson.* Ment. Hyg., Oct., 1919, 3, No. 4, 527–565. — This paper is the report of the Georgia Commission on Feeblemindedness and the survey of the National Committee for Mental Hygiene. Its industrial interest lies in the exposition of the methods employed to detect feeblemindedness, and the relationship of feeblemindedness to pauperism, dependency, crime, vagrancy and the like — problems of importance to employment managers. — S. Cobb.

Shell-Shock Analogues: Neuroses in Civil Life Having a Sudden or Critical Origin. *Mary C. Jarrett.* Bulletin of the Massachusetts Commission on Mental Diseases, Jan., 1919, 3, No. 1, 59–73. — There are here fifteen case histories, mainly of protracted mental complications following physical shock or definite trauma. The cases have a general interest for those who must clarify the concept of shell shock, and the industrial physician will find some data that may be useful. — G. E. Partridge.

The Neurosis of the Housewife. *A. Myerson.* Bulletin of the Massachusetts Commission on Mental Diseases, Jan., 1919, 3, No. 1, 45–54. — The writer presents a composite picture of the effects of the total of home cares and housework upon a certain type of mind. He thinks there is a typical result under conditions very frequently found, especially among the poor. The central emotion or mood of the state is anxiety with hypochondriacal symptoms and a widely varied subjective manifestation in the form of pains and ill-defined distress. The causes mentioned are: the monotony and gradual fixation of home life in depressive and uninspiring routine; retirement of husband and wife, after a few years, into worlds having little in common; excessive indoor life; irregular habits of eating; poverty — both on account of the physical hardships it brings and because of the inhibition of many desires; conflict with the husband in regard to authority in the house; and, finally, the conflicts that occur in the sexual life — ill-matedness, fear of pregnancy, resentment at the implication of possession. The crux of the whole disturbance that ensues rests in the emotional life. There are different types. The thoroughly selfish woman gains relief in her own pleasures. The strong woman adjusts herself to conditions. The peasant type gains contentment from a minimum of satisfactions. But very many women have more feeling than capacity for adjustment. The characteristic result is a neurosis in which there is inability to know how to act. Many can neither accept nor reject their life conditions, and so there is wanting a fundamental and necessary attitude for mental health, a fixed viewpoint. In the background of the neurosis is a doubt. A great many of these women are not neuropathic constitutionally. There is a native temperament that is good and normal, but merely not adapted for a very hard and unsatisfactory life. The cure lies in the removal of the unfavorable conditions and in learning to make mental adjustment. — G. E. Partridge.

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

The Determination of Carbon Monoxide in Blood. *Donald D. Van Slyke* and *Harald A. Salvesen*. Jour. Biol. Chem., Nov., 1919, 40, No. 1, 103–107. — A method is described for the gasometric determination of carbon monoxide in blood. The same apparatus which has been previously described by Van Slyke for determination of oxygen and carbon dioxide is used. The oxygen and carbon monoxide are set free from the hemoglobin by ferricyanide, the oxygen is absorbed in the apparatus by alkaline pyrogallate, and the remaining carbon monoxide is measured directly at atmospheric pressure, making the necessary correction for the nitrogen dissolved in blood. Only 2 c. c. of blood are required for a determination which may be finished in from ten to fifteen minutes. — A. S. Minot.

DUST HAZARDS AND THEIR EFFECTS

Health Hazards of Non-Poisonous Dusts — A Résumé of Some Recent Investigations. *Emery R. Hayhurst*. Am. Jour. Pub. Health, Jan., 1920, 10, No. 1, 60–65. — Among the conclusions which the author draws are the following:

Some 5,000,000 persons, or 10 per cent. of all workers, are subject to the health hazards of non-poisonous dusts in the United States.

With any type of dust, duration of exposure, amount actually inhaled, non-protective physiology and anatomy of the individual, with stress on lack of personal hygiene, are all-important points.

Improvements in estimating the amounts of dust in the atmosphere breathed and the amounts and character of foreign matter in the lungs have thrown much light on the dangerous nature of inhaled dusts.

The body defenses against dust, while intricate and subject to wide variations, are becoming better understood and appreciated, and are wonderfully efficient if coupled with a reasonable amount of practical hygiene.

The amount of dust accumulation in the lungs seems controllable by keeping the rates of invasion below the rates of elimination and, with these things known or ascertainable, it begins to appear as though a scientific basis is near at hand for estimating the maximum amounts of dusts permissible in the breathing atmosphere, and the proper modifications or admixtures of otherwise uncontrollable dusts that will render them comparatively harmless. — H. F. Smyth.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

Campaign Against Tuberculosis. Health Bull., North Carolina State Board of Health, Dec., 1919, 34, No. 12, 5–23. — In this issue there appear seven articles dealing with the campaign against tuberculosis conducted by the State Board of Health of North Carolina. These articles appear under the following titles: Tuberculosis Work by the Whole-Time County Health Officer in Co-operation with the State Board of Health; How to Prevent the Spread of Tuberculosis; Rest, the Main Essential; The Sputum and the Germ; Occupational Therapy — Vocational Education at State Sanatorium; The Sanatorium Clinics; The Proper Organization for the Fight against Tuberculosis for a Town and County; and Unit of Tuberculosis of State Board of Health. — L. A. Shaw.

The Tuberculosis Problem. *A. G. Young*. Bull. Maine State Dept. Health, Oct., 1919, 2, No. 10, 169–190. — A statement of the policy of the State Department of Health of Maine in the treatment and prevention of tuberculosis. — L. A. Shaw.

Tuberculosis in New York City During 1918. *Louis I. Harris*. Month. Bull., N. Y. City Dept. Health, Oct., 1919, 9, No. 10, 233–248. — This article considers the cases of tuberculosis in New York City during 1918 under the following heads; tuberculosis cared for in institutions; homeless and lost cases; supervision of home conditions of patients; cases under care of private physicians; department clinic cases; and out-of-town cases. The activities of the tuberculosis clinics of the Health Department and of the day camp tuberculosis preventoria are enumerated. Tables are appended giving data of work performed by the tuberculosis clinics, applicants for examination, general status of tuberculosis in New York City during 1918, etc. — L. A. Shaw.

Tuberculous Residents of New York City Need not be Sent West for Cure. Week. Bull., N. Y. City Dept. Health, Nov. 29, 1919, 8, No. 47, 377–380. — The widely prevalent practice of sending tuberculous patients with limited financial means to western cities for supposed climatic advantages is here shown to be pernicious. In all but exceptional cases, the faith in climatic treatment has been proven to be erroneous. The lack of charitable aid, of adequate medical assistance, of employment, and of the care of friends and relatives only tends to aggravate the general condition of the patient. Home treat-

ment combines all the physical essentials for treatment which may be found in the western sanatoria, and comprises inestimable advantages which are denied to the patient living in exile. — L. A. Shaw.

A Factory for the Tuberculous. Survey, Dec. 13, 1919, 43, No. 7, 230–231. — An account of a unique scheme for offering work in proportion to the strength of those affected with tuberculosis. As soon as a patient is sufficiently strong to undertake work, he is allowed to work in this New York factory for the number of hours per day which a careful physical examination determines as desirable. The work is garment making. The factory is operated on a paying basis, and the average wage is $25 per week. During the entire working day each person is subject to special rules of hygiene, rest and diet. By this scheme, the convalescent is able to work within the limits of his strength and contribute toward the support of his family. — C. H. Paull.

Today's World Problem in Disease Prevention. U. S. Pub. Health Ser., Pub. Health Rep., Nov. 28, 1919, 34, No. 48, 2715. — "The United States Public Health Service has recently published a 136-page book on venereal diseases, entitled *Today's World Problem in Disease Prevention*. It is a popular, non-technical discussion of syphilis and gonorrhea by Dr. John H. Stokes, Chief of the Section of Dermatology and Syphilology of the Mayo Clinic, Rochester, Minn.

"A limited number of copies of this book are now available, and until the supply is exhausted a copy will be sent to anyone who can use it advantageously. Applications should be made by letter addressed to the Surgeon General, United States Public Health Service, 228 First Street, N. W., Washington, D.C." — L. A. Shaw.

The Public Health Service Campaign Against Venereal Diseases. *C. C. Pierce.* Soc. Hyg., Oct., 1919, 5, No. 4, 415–439. — Herein is given the plan of co-operation between the United States Public Health Service and the state Boards of Health as adopted in January, 1918, for the control of venereal diseases. — L. A. Shaw.

Suggestions for Community Action Against Venereal Disease. *Dana L. Jewell.* Soc. Hyg., Oct., 1919, 5, No. 4, 497–519. — As a result of the campaign of the federal government against venereal disease during the war, numerous community committees under various names have been organized in the hope of perpetuating the effort and of making the good results permanent. In order that such committees may unite the various shades of public opinion, they must be very careful not to confuse the moral issue with the health issue. The moral aspect of the venereal disease problem is certain to excite antagonism and thus destroy co-operate action; whereas action based upon a health basis presents none of these conflicting elements. — L. A. Shaw.

The Treatment of the Venereal Disease Patient. *H. E. Kleinschmidt.* Soc. Hyg., Oct., 1919, 5, No. 4, 533–538. — This article treats of the organization of venereal disease clinics with especial reference to privacy and the general morale of the relations between the clinical personnel and the patients. Both privacy and modesty are essential if the patient is to be held until cured. The education so vital to the prevention of venereal diseases will be impossible unless the relation between doctor and patient is maintained at a high standard. — L. A. Shaw.

OCCUPATIONAL AFFECTIONS OF THE SKIN AND SPECIAL SENSES

Memorandum on Cutting Lubricants and Cooling Liquids, and on Skin Diseases Produced by Lubricants. Department of Scientific and Industrial Research, Bull. No. 2, London, 1918, pp. 8. — Part I of this pamphlet deals with cutting lubricants and cooling liquids, the selection of cutting lubricants, and their physical and chemical points of interest. Part II, which deals with skin diseases produced by lubricants, we quote in full.

Skin Diseases Produced by Lubricants

"1. Oil rashes are, generally speaking, of two kinds — the first is due to plugging of the small glands at the root of the hairs on the arms and legs of workers, the second to mechanical injury to the skin produced by metallic particles suspended in the cutting lubricant.

"(a) *Plugging of the Glands of the Hair Follicles.*

"Primarily this is purely mechanical; a mixture of oil and dirt blocks the minute openings of these glands and sets up inflammation round the hair (folliculitis). The inflammation commenced in this way may lead on to suppuration or abscess formation (a boil). If many hairs are affected the arm presents an appearance of a crop of raised red spots (papules), with a black spot as a centre, or, if the inflammation has gone as far as suppuration (abscess formation), a yellow head.

"(b) *Mechanical Injury to the Skin by Metallic Particles.*

"Minute metallic particles suspended in the cutting lubricant may produce injury to the skin. This occurs chiefly on the hands, where two surfaces are rubbed together, *e. g.*, the skin between the fingers. Injury to the skin may also be produced on any part of the hands and arms by wiping with a cloth or rag while the hands or arms are coated with a film of fluid in which metallic particles are suspended. Injury to the skin allows germs to enter and causes septic infection.

"2. *Prevention.* — (a) *Cleanliness of the Worker.* — Washing accommodation for workers in contact with oil must be on a liberal scale. Hot water, soap, and scrubbing brushes are essential. Workers should

be instructed not to wipe their hands on rags, etc., before washing and to avoid washing their hands in the cutting compounds.

" Ether soap, which dissolves oil, has been found useful in preventing inflammation of the hair follicles. Dusting the arms with a powder containing equal parts of starch and zinc oxide before commencing work prevents action of the oil on the skin.

" (b) *Cleanness of the Lubricant.* — Care must be taken in the handling of the constituents before blending that they have not undergone changes (*e. g.*, formation of free fatty acid).

" Constant removal of metal particles is necessary to avoid injury to the skin. Filtration, such as is provided on the machines, and centrifugal action are insufficient to remove the minute metal particles which may injure the skin. Where cutting oils (straight oils) are used, their viscosity can be diminished by heat sufficiently to allow the particles to sink without affecting their value as lubricants. This operation completely removes all metal particles. In other lubricants where such a procedure is impossible it is necessary constantly to change and renew the cutting lubricants.

" (c) *Cleanness of the Machines.* — Frequent cleaning of the machines with the removal of all the old lubricant from all parts of the machine is essential.

" 3. *Addition of Disinfectants or Antiseptics to the Lubricants.* — Various antiseptics, carbolic acid (1 per cent. to 2 per cent.) being the most common, have been added to the lubricant to prevent rashes, and in the case of cutting emulsions 0.5 per cent. of disinfectants soluble in water have been used for this purpose. The results obtained have not been altogether satisfactory, and reliance cannot be placed upon such a method to prevent skin rashes.

" 4. *Sterilization by Heat.* — It has been suggested to heat the cutting oil to 300° F. for a short period with a view to sterilizing it as well as to increase its antiseptic or germicidal action.

" Laboratory experiments in America have shown that used oil possesses rather marked germicidal effects, and in view of the fact that the used oil becomes heated during use attempts were made to determine whether heating new oil would also bestow upon it germicidal powers. Apparently, heating does produce such a change, but the temperature required is upwards of 125° C. The actual temperature required to produce this germicidal action in the oil has not yet been determined, but it has been recommended to mix new oil with the used oil before filtering and heating, so that the new oil would possess to some extent the germicidal power of the used oil.

" 5. *Removal of Workers with Septic Infection of the Hands.* — Workers whose hands become the seat of septic infection should not be allowed to work on machines, as they are liable to infect the oil with germs and so infect others.

" 6. *Treatment.* — (a) *Folliculitis Produced by Blocking of the Glands.* — As a general rule, frequent washing with soap and hot water is sufficient to produce a rapid cure. The skin may be subsequently dusted with zinc oxide and starch powder.

" It has been found that where this is insufficient a mild antiseptic applied on lint has relieved the irritation and given good results.

" (b) *Septic Infection of the Skin due to Cuts.* — Septic infection should be treated on general principles by the application of suitable antiseptic dressings.

" 7. *Susceptibility.* — Certain individuals appear to be particularly susceptible to the action of lubricants. Such persons when found should be removed from contact with oil." — K. R. Drinker.

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

Public Service Under Government Operation of the Railroads. *Max Thelen.* Ann. Am. Acad. Pol. Sci., Nov., 1919, 86, No. 175, 15–34. — Pages 29 and 30 contain a brief account of the work of the Safety Section of the Division of Operation. The Safety Section has provided for Safety Committees on all railroads, and has inaugurated a " No Accident Week " Campaign. No Accident Week (June 22–29, 1919) in the Northwestern region showed a decrease of 75.26 per cent. in the total number of accidents as compared with the corresponding week of the previous year. Most of this decrease was in non-fatal accidents. The writer credits a large part of the success of the Safety Committees to uniform control. — C. H. Paull.

Shipping Containers. *C. P. Beistle.* Jour. Soc. Chem. Indus., Sept. 15, 1919, 38, No. 17, 330–337. — An account of the work of the Bureau of Explosives in improving specifications for shipping containers for inflammable and explosive materials, etc. Statistics are given showing the consequent decrease in loss of life and property. — C. H. Fiske.

Explosions in Coal Mines. *J. S. Haldane.* Jour. Soc. Chem. Indust., Sept. 15, 1919, 38, No. 17, 338–339. — To prevent gas explosions in mines, it would be necessary to reduce the oxygen content to less than 14 per cent. The high per cent. of carbon dioxide that would result if this dilution were made with flue gas would seriously interfere with the workers. All serious coal-mine explosions depend upon propagation by ignited coal dust; consequently the best preventive device is to dilute the coal dust with inert material. This can be done by covering the mine roads with stone dust. — C. H. Fiske.

Note on Explosions in Coal Mines. *George Harker.* Jour. Soc. Chem. Indust., Sept. 15, 1919, 38, No. 17, 338. — The use of flue gas to prevent mine explosions (by diminishing the oxygen content

ment combines all the physical essentials for treatment which may be found in the western sanatoria, and comprises inestimable advantages which are denied to the patient living in exile. — L. A. Shaw.

A Factory for the Tuberculous. Survey, Dec. 13, 1919, 43, No. 7, 230–231. — An account of a unique scheme for offering work in proportion to the strength of those affected with tuberculosis. As soon as a patient is sufficiently strong to undertake work, he is allowed to work in this New York factory for the number of hours per day which a careful physical examination determines as desirable. The work is garment making. The factory is operated on a paying basis, and the average wage is $25 per week. During the entire working day each person is subject to special rules of hygiene, rest and diet. By this scheme, the convalescent is able to work within the limits of his strength and contribute toward the support of his family. — C. H. Paull.

Today's World Problem in Disease Prevention. U. S. Pub. Health Ser., Pub. Health Rep., Nov. 28, 1919, 34, No. 48, 2715. — "The United States Public Health Service has recently published a 136-page book on venereal diseases, entitled *Today's World Problem in Disease Prevention*. It is a popular, non-technical discussion of syphilis and gonorrhea by Dr. John H. Stokes, Chief of the Section of Dermatology and Syphilology of the Mayo Clinic, Rochester, Minn.

"A limited number of copies of this book are now available, and until the supply is exhausted a copy will be sent to anyone who can use it advantageously. Applications should be made by letter addressed to the Surgeon General, United States Public Health Service, 228 First Street, N. W., Washington, D.C." — L. A. Shaw.

The Public Health Service Campaign Against Venereal Diseases. *C. C. Pierce.* Soc. Hyg., Oct., 1919, 5, No. 4, 415–439. — Herein is given the plan of co-operation between the United States Public Health Service and the state Boards of Health as adopted in January, 1918, for the control of venereal diseases. — L. A. Shaw.

Suggestions for Community Action Against Venereal Disease. *Dana L. Jewell.* Soc. Hyg., Oct., 1919, 5, No. 4, 497–519. — As a result of the campaign of the federal government against venereal disease during the war, numerous community committees under various names have been organized in the hope of perpetuating the effort and of making the good results permanent. In order that such committees may unite the various shades of public opinion, they must be very careful not to confuse the moral issue with the health issue. The moral aspect of the venereal disease problem is certain to excite antagonism and thus destroy co-operate action; whereas action based upon a health basis presents none of these conflicting elements. — L. A. Shaw.

The Treatment of the Venereal Disease Patient. *H. E. Kleinschmidt.* Soc. Hyg., Oct., 1919, 5, No. 4, 533–538. — This article treats of the organization of venereal disease clinics with especial reference to privacy and the general morale of the relations between the clinical personnel and the patients. Both privacy and modesty are essential if the patient is to be held until cured. The education so vital to the prevention of venereal diseases will be impossible unless the relation between doctor and patient is maintained at a high standard. — L. A. Shaw.

OCCUPATIONAL AFFECTIONS OF THE SKIN AND SPECIAL SENSES

Memorandum on Cutting Lubricants and Cooling Liquids, and on Skin Diseases Produced by Lubricants. Department of Scientific and Industrial Research, Bull. No. 2, London, 1918, pp. 8. — Part I of this pamphlet deals with cutting lubricants and cooling liquids, the selection of cutting lubricants, and their physical and chemical points of interest. Part II, which deals with skin diseases produced by lubricants, we quote in full.

Skin Diseases Produced by Lubricants

"1. Oil rashes are, generally speaking, of two kinds — the first is due to plugging of the small glands at the root of the hairs on the arms and legs of workers, the second to mechanical injury to the skin produced by metallic particles suspended in the cutting lubricant.

"(a) *Plugging of the Glands of the Hair Follicles.*

"Primarily this is purely mechanical; a mixture of oil and dirt blocks the minute openings of these glands and sets up inflammation round the hair (folliculitis). The inflammation commenced in this way may lead on to suppuration or abscess formation (a boil). If many hairs are affected the arm presents an appearance of a crop of raised red spots (papules), with a black spot as a centre, or, if the inflammation has gone as far as suppuration (abscess formation), a yellow head.

"(b) *Mechanical Injury to the Skin by Metallic Particles.*

"Minute metallic particles suspended in the cutting lubricant may produce injury to the skin. This occurs chiefly on the hands, where two surfaces are rubbed together, *e. g.*, the skin between the fingers. Injury to the skin may also be produced on any part of the hands and arms by wiping with a cloth or rag while the hands or arms are coated with a film of fluid in which metallic particles are suspended. Injury to the skin allows germs to enter and causes septic infection.

"2. *Prevention.* — (a) *Cleanliness of the Worker.* — Washing accommodation for workers in contact with oil must be on a liberal scale. Hot water, soap, and scrubbing brushes are essential. Workers should

be instructed not to wipe their hands on rags, etc., before washing and to avoid washing their hands in the cutting compounds.

" Ether soap, which dissolves oil, has been found useful in preventing inflammation of the hair follicles. Dusting the arms with a powder containing equal parts of starch and zinc oxide before commencing work prevents action of the oil on the skin.

" (b) *Cleanness of the Lubricant.* — Care must be taken in the handling of the constituents before blending that they have not undergone changes (*e. g.*, formation of free fatty acid).

" Constant removal of metal particles is necessary to avoid injury to the skin. Filtration, such as is provided on the machines, and centrifugal action are insufficient to remove the minute metal particles which may injure the skin. Where cutting oils (straight oils) are used, their viscosity can be diminished by heat sufficiently to allow the particles to sink without affecting their value as lubricants. This operation completely removes all metal particles. In other lubricants where such a procedure is impossible it is necessary constantly to change and renew the cutting lubricants.

" (c) *Cleanness of the Machines.* — Frequent cleaning of the machines with the removal of all the old lubricant from all parts of the machine is essential.

" 3. *Addition of Disinfectants or Antiseptics to the Lubricants.* — Various antiseptics, carbolic acid (1 per cent. to 2 per cent.) being the most common, have been added to the lubricant to prevent rashes, and in the case of cutting emulsions 0.5 per cent. of disinfectants soluble in water have been used for this purpose. The results obtained have not been altogether satisfactory, and reliance cannot be placed upon such a method to prevent skin rashes.

" 4. *Sterilization by Heat.* — It has been suggested to heat the cutting oil to 300° F. for a short period with a view to sterilizing it as well as to increase its antiseptic or germicidal action.

" Laboratory experiments in America have shown that used oil possesses rather marked germicidal effects, and in view of the fact that the used oil becomes heated during use attempts were made to determine whether heating new oil would also bestow upon it germicidal powers. Apparently, heating does produce such a change, but the temperature required is upwards of 125° C. The actual temperature required to produce this germicidal action in the oil has not yet been determined, but it has been recommended to mix new oil with the used oil before filtering and heating, so that the new oil would possess to some extent the germicidal power of the used oil.

" 5. *Removal of Workers with Septic Infection of the Hands.* — Workers whose hands become the seat of septic infection should not be allowed to work on machines, as they are liable to infect the oil with germs and so infect others.

" 6. *Treatment.* — (a) *Folliculitis Produced by Blocking of the Glands.* — As a general rule, frequent washing with soap and hot water is sufficient to produce a rapid cure. The skin may be subsequently dusted with zinc oxide and starch powder.

" It has been found that where this is insufficient a mild antiseptic applied on lint has relieved the irritation and given good results.

" (b) *Septic Infection of the Skin due to Cuts.* — Septic infection should be treated on general principles by the application of suitable antiseptic dressings.

" 7. *Susceptibility.* — Certain individuals appear to be particularly susceptible to the action of lubricants. Such persons when found should be removed from contact with oil." — K. R. Drinker.

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Note on Explosions in Coal Mines. *George Harker.* Jour. Soc. Chem. Indust., Sept. 15, 1919, 38, No. 17, 338. — The use of flue gas to prevent mine explosions (by diminishing the oxygen content

of the atmosphere) is not safe unless all carbon monoxide is removed. It is suggested that decreasing the oxygen content to 17 per cent. would probably affect the working capacity of the operators. As an alternative method, the author proposes that the mine be divided into various parts separated from one another by layers of inert gas. — C. H. Fiske.

INDUSTRIAL SURGERY

First French Congress on Orthopedic Surgery. *Albert Mouchet.* Presse méd., Oct. 29, 1919, 27, No. 63, 637. — A report of the proceedings of the meeting. Many eminent French surgeons discussed the three questions proposed: Amputations and their Relations to Prostheses, Spondylitis in War Surgery, and Treatment of Pseudarthroses. — T. J. Putnam.

The Technique of Intracardiac Injections. *Joh. Volkmann.* Deutsch. med. Wchnschr., Aug. 28, 1919, 45, No. 35, 968–969. — The author has used intracardiac puncture in twenty-six cases of cardiac failure from various causes. The fourth left interspace at the edge of the sternum is palpated and marked with tincture of iodine. A local anesthetic is seldom necessary. The operator stands at the patient's left, facing him, holding in his right hand a No. 4, 6-cm. needle, with a cork transfixed upon it 4 to 5 cm. from the point. The needle is introduced in the angle between the edge of the sternum and the fourth and fifth ribs, pointing a little upward and toward the midline in the plane of the fourth interspace. As it is pushed in, it encounters the hard surface of the heart muscle. The pericardium is seldom to be felt. The needle now begins to move up and down from the contractions of the heart. It is pushed on up to the cork, then cautiously 1 cm. further until blood flows from it, the right chamber lying from 4 to 5 cm. below the surface. Injections should not be made into the heart muscle itself. The mammaries, intercostals, and vagus are thus avoided, and a negligible amount of damage is done to the heart and overlying tissues.

It is doubtful whether merely pricking the heart acts as a stimulus, although the injection of simple salt solution so as to raise the intracardiac pressure may do so. The most effective procedure, however, is to inject 1 c. c. of 1/1000 epinephrin solution in 20 c. c. normal saline, in the course of about two minutes. The effect is usually noticeable in two or three minutes more, and the stimulation may then be reinforced by a dose of strophanthin, well diluted with saline to prevent the heart from " running dry." The author believes that the instruments for cardiac puncture, like those for tracheotomy, should be a part of the equipment of every clinic. — T. J. Putnam.

Treatment of Complicated Finger and Hand Wounds by Traction Splints. *Heinz Walther.* Deutsch. med. Wchnschr., Sept. 18, 1919, 45, No. 38, 1048–1050. — In severely traumatized hands, it is necessary to prevent the spread of infection, to fix injured joints in the most normal position possible, and to preserve or restore their function. Ordinary splinting is most effective in combating infection, but often produces lasting stiffness of the joints. As in larger joints, traction is the most efficient means of treatment to meet the other indications. The author describes a simple traction apparatus. Strong wire netting (Kramer-Schiene) is used as a splint, and dorsal and palmar pieces are cut about 10 cm. broad and long enough to extend from the elbow to 40 cm. beyond the tips of the fingers. These are moulded, padded, and bound in place, and the cross-wires are removed from their projecting ends. The bared longitudinal wires are then bent through a large arc or a circle, and their ends are brought into position to be used as points of traction. From them threads are extended under moderate tension to holes drilled through the nails of the injured fingers, where they are fastened. This obviates the use of adhesive plaster and of rubber bands, both of which are unobtainable in Germany.

Such an apparatus is light and not uncomfortable, and does not require the patient to be kept in bed. It minimizes the necessity for incisions, and permits the treatment of the wound by the " open " method, or by dressings. The author uses dry sugar as a dusting-powder, believing that it is slightly antiseptic and stimulates the flow of lymph. His results have been excellent. — T. J. Putnam.

FATIGUE

Fatigue and Industrial Efficiency. *Walter N. Polakov.* Ind. Management, Dec., 1919, 58, No. 6, 448–452. — The writer bases his conclusions upon his experience in observing the relation of hours of labor, monotony, etc., to fatigue in power plants. Fatigue in power plants is evident not so much in the worker's inability to perform manual work as in his inability to get satisfactory results. He may be able to put just as much coal on the fire, but he will not maintain his pressure uniformly. This is due, the writer points out, to occupational fatigue, being in a considerable measure of nervous origin. By charts it is shown how fatigue brings about certain tendencies in productive work, both within the day and within the week, and how important the element of fatigue accumulation is. The end of the week shows a fatigue accumulation which, if not relieved by a day of rest, will be carried along even over a term of years.

In conclusion, the writer says: " The task of engineers viewed in this light is this, to provide opportunities for leisure rather than to invent new yokes and tread mills." — C. H. Paull.

WOMEN AND CHILDREN IN INDUSTRY

Women in the Lead Industries. *Alice Hamilton.* U. S. Bur. Labor Statis., Bull. No. 253, Feb., 1919. — This is a thirty-eight page pamphlet dealing with the subject of women in the lead industries. The material is dealt with under the following subject headings: What is Industrial Lead Poisoning or Plumbism, Individual Susceptibility, Lead Poisoning in Women, Lead Compounds Used in Industry and their Comparative Danger, How Does Lead Enter the Body, Lead Industries in the United States (lead mining, lead smelting and refining, metallic-lead industries, manufacture of white lead, grinding of paint, painting trade, commercial artists or retouchers, lithotransfer work, manufacture of red lead and litharge, manufacture of storage batteries, glazing of pottery and tiles, manufacture of porcelain enameled sanitary ware, compounding of rubber), and Prevention of Lead Poisoning. — K. R. Drinker.

Output of Women Workers in Relation to Hours of Work in Shell Making. U. S. Bur. Labor Statis., Month. Labor Rev., Oct., 1919, 9, No. 4, 217–219. — This is a brief comment on Report No. 2 of the Industrial Fatigue Research Board (British) entitled "The Output of Women Workers in Relation to Hours of Work in Shell Making." A study of the comparative hourly output under shifts of different lengths showed that the work (under the control of the women as far as speed was concerned) accomplished in 100 minutes of the long-hour system (12-hour shift) was carried out in 80.5 minutes of the short-hour system (7 to 8-hour shift), a decrease of 19.5 per cent. in time. A study of hourly output led to the following general conclusions:

"The curves of output for the short shifts give evidence of the possibility of running at full output right to the end of the shift, but the curves for the long shifts give no such evidence.

"A comparison of the same workers' output records for the long and short shifts shows inferiority in hourly output during the later hours of the long shifts.

"No evidence of detrimental effect of night work in comparison with day work is traceable." — K. R. Drinker.

Women in the Railroad World. *Pauline Goldmark.* Ann. Am. Acad. Pol. Sc., Nov., 1919, 86, No. 175, 214–221. — The writer calls attention to the common misconception regarding the character of the work done by women in connection with the railroads during and since the war. About 70 per cent. went into clerical work. Many of these were relatives of men who had entered the army. Relatively few women did rougher manual work. In railroad shops at the time of maximum employment only 5 per cent. of the total employees were women. About the same proportion of women were employed in the signal service. Only 1 per cent. of the workers in roundhouses and on the tracks were women.

In general, it has been found that the heavier manual labor is unsatisfactory for women. Since the end of the war there has been a marked falling off in the number of women employed. This is ascribed to several causes. Many men returning from war were reinstated and women were naturally laid off, since they had in most cases been most recently employed. There was also a reduction in the railroad force during 1919 which affected women. Then there was a falling off of women employed in rougher labor, due to their not being physically fit for the work. — C. H. Paull.

The Relation of Alcohol and Alcoholism to Maternity and Child Welfare. *Mary Scharlier.* The Child, Dec., 1919, 10, No. 3, 97–107. — A brief summary is made of recent work and opinion on the subject of germ pathology and the relations of alcohol to the unborn child. All these experiments and observations go to prove the fallacy of the old belief that expectant and nursing mothers should drink stout. In addition to the difficulties to which all women are subject as a consequence of child-bearing, the industrial women have their special temptations — temptations which ought not to exist and which should be abolished by the pressure of instructed public opinion. Exhaustion from overwork, too long shifts of work, excessive distance to and from work, inadequate conditions of transportation, have all been shown to be factors endangering the sobriety of women workers. All the available data "point clearly to the conclusion that amongst the women of this country (England) there has been considerable progress towards a higher standard of sobriety." The conditions during the war have been good, and there has been little complaint of the conduct of women. Occupation, steady wages, and independent, self-supporting careers have developed the best qualities of women, and have been in all respects, but particularly with regard to health, beneficial to the community. — G. E. Partridge.

Some Problems of the Work Age Level. *G. G. Ide.* The Psychological Clinic, Dec., 1919, 13, Nos. 1–3, 75–87. — The law of Pennsylvania requires school attendance of all children from the ages of 8 to 16 years, except that the child who has reached the age of 14 and has completed the sixth grade may satisfy the requirements by attending continuation school for one day each week. There are several evils of this system. The children who leave school before the age of 16 are usually those who need training of a kind which the schools do not give, but which, under pressure, they should be made to offer. In the second place, it is an unnecessary waste for the schools to be burdened with children who are discovered, too late, to be failures in their studies. At present, unless a child remains in one grade several

years, little effort is made to discover the cause of retardation. There should be earlier differentiation of the group and of the curriculum. There should be more work definitely directed toward fitting the child for remunerative labor, so that the deficient child and all who do not progress well in school may have a better chance than they do now. — G. E. Partridge.

Filling in the Gaps of Child Life. *John C. Gebhart.* Survey, Dec. 27, 1919, 43, No. 9, 313–314. — The writer calls attention particularly in this article to the necessity for developing greater facilities for the care of children between the ages of 2 years and 6 years. In this period of four years, the child has passed beyond the care of the baby clinic and has not reached the age where attendance at school brings him under the care of the school physician. During this period of lack of attention, the foundation is often laid for future weakness and ill health. The New York Association for Improving the Conditions of the Poor undertook an education campaign in certain selected areas to bring children between the ages of 2 and 6 years under proper medical observation. This work was done largely by reaching the mothers through visits. The importance of proper nourishment was particularly emphasized. Most encouraging results have been obtained. — C. H. Paull.

INDUSTRIAL SANITATION: ILLUMINATION, VENTILATION, HEATING, WATER SUPPLY, SEWAGE DISPOSAL

The Rôle of Ventilation in Preventive Medicine. *George T. Palmer.* Mod. Med., Oct., 1919, 1, No. 6, 509–515. — Statistics on respiratory diseases are quoted, showing a higher death rate in winter months. Reference is also made to experiments under different temperatures. The article ends with suggestions for a cool air campaign under the direction of public health officers. — A. B. Emmons.

Water Supply and Sanitary Engineering, 1919. Engineer, Jan. 2, 1920, 129, No. 3340, 10–112. — A review of the general progress of sanitary engineering with especial reference to its influence upon design and construction of works begun or completed during 1919. — G. M. Fair.

Field Methods for the Chlorination of Small Amounts of Water. *F. R. Georgia.* Jour. Am. Waterworks Assn., Nov., 1919, 6, No. 4, 654–664. — A description of some of the methods used in the American Expeditionary Forces to chlorinate small amounts of water by the use of home-made devices. Tables of some of the bacteriological results obtained are also included. — G. M. Fair.

Prevention and Cure of "Red Water." *William H. Walker.* Munic. Jour., Nov. 22, 1919, 47, No. 21, 312–314. — The cure of "red water" lies in the prevention of the rusting of iron pipes, especially in hot-water systems, by removing the oxygen from the water in a deactivator in which the oxygen is consumed by corroding iron sheets chemically treated so that rapid corrosion of their surface takes place. The iron rust taken into suspension is subsequently removed by filtration. — G. M. Fair.

The Relative Sanitary Values of Different Types of Drinking Fountains. Part II. How the Fountains are Used, and the Results of Tests of Sloping Stream Types. *Louis V. Dieter.* Am. City, Dec., 1919, 21, No. 6, 549–554. — In observations of the methods used by some 1,500 to 2,000 drinkers from practically all types of fountains, Mr. Dieter found that despite guards a surprisingly large number of drinkers managed to place their lips upon the nozzle, that at least 40 per cent. placed their mouths directly on the guard, and that others had the pernicious habit of placing their hands and fingers on the nozzle. Laboratory tests and examinations of public fountains of the sloping stream type showed that it is possible to design fountains of this type so that they are safe. At the same time, however, it was found that many fountains of this type, which are in use today, are no better than the vertical stream fountain. The author's conclusion is that a fountain is strictly sanitary when it complies with the following rules:

1. It must not depend upon the personal element.
2. It must be impossible for organisms or other foreign particles to dance on the bubble.
3. It must be impossible for washings from the mouth to fall back upon or splash on the nozzle.
4. It must be impossible to touch the nozzle with the mouth or with the fingers.
5. It must be impossible for the mouth of the drinker to come in contact with the guard during the process of drinking. — G. M. Fair.

Report of Committee on Private Fire Protection Service. Jour. Am. Waterworks Assn., Nov., 1919, 6, No. 4, 679–784. — This extensive report takes up in detail the physical and fiscal questions of private fire protection services. The physical questions bearing more directly upon industrial hygiene are summed up as follows:

"1. Water for domestic or commercial uses should be furnished through the same pipe with water for private fire protection equipment for certain classes of consumers only, in which case the service should be properly metered. In no case should a combined connection be allowed for factories, large industrial establishments, or railroad terminals and yards.

"2. No fire service connection should be installed without a fire service meter unless a system similar or equivalent to the 'Bond-Alarm-Inspection System' is adopted.

"3. No private fire service connection should be installed without careful and adequate provision for properly located control valves equipped with indicator posts.

"4. No service connection with a capacity in excess of 50 per cent. of the water main supplying it should be installed. All risks requiring more than 50 per cent. of the main should be required to provide a supplemental water supply by storing water in elevated tanks.

"5. Where an independent supply is used for private fire protection, the fire service connection from the public mains should discharge either into a cistern or elevated tank at or above the flow line and the protected property required to take water for fire protection equipment from the cistern or tank to preclude the possibility of back flow. When such an arrangement is not possible of attainment, double check valves should be installed with proper means for inspection and testing. Such valves should be regularly and systematically inspected and reports filed as to their condition."

Valuable references to the legal, economic, structural, and hygienic sides of the problem are appended to the report. — G. M. Fair.

Are Check Valves Between Public and Private Water Supplies Necessary or Safe? *Caleb M. Saville.* Am. City, Dec., 1919, 21, No. 6, 558–561. — The writer believes that the matter of interconnecting public and private water supplies resolves itself into a question of expediency for local determination — that is, which is the lesser of two evils, danger to public health or risk of conflagration with its attendant hazard to human life and continuity of employment, not to mention loss of property? If connection is decided to be necessary, without doubt the double check value in its latest design and rigid inspection will afford the best protection at present available. The haphazard interconnection of private and public supplies, of which an instance leading to the contamination of the Hartford supply is cited, is naturally to be condemned. — G. M. Fair.

An Important Feature in Plumbing Specifications. *J. J. Cosgrove.* Am. Arch., Dec. 3, 1919, 116, No. 2293, 705–706. — The Sanitary Potters' Association by a recent resolution has declared that after April 1, 1920 they will make no more closets with projecting outlet horns. This makes it impossible to set the new type closet in putty — a method formerly specified — and will lead to the adoption of the better metal-to-metal flanges in fastening closets to the floor. The following wording from the Industrial Code of the state of New York is recommended as a standard form of specification: "Rule 120. The connection between soil pipe and water closet hereafter installed shall be made by means of a flexible, metal-to-metal closet floor flange. Putty, paste, gasket, slip joint or rigid connections of any kind will not be permitted for water closets or slop sinks." — G. M. Fair.

Disinfection of Sewage. *Chester G. Wigley.* Munic. Jour., Nov. 15, 1919, 47, No. 20, 292–293. — A discussion of results obtained at Millville and Camp Merritt by the use of chlorine gas for the disinfection of sewage. The results of a series of tests are given. — G. M. Fair.

Lawrence Sewage Treatment Studies. Munic. Jour., Dec. 27, 1919, 47, No. 26, 345–346. — Excerpts from the latest Annual Report of the Massachusetts State Department of Health are given. — G. M. Fair.

Milwaukee Sewage-Testing Station: Experimental Data. Engin. N.-Rec., Dec. 25, 1919, 83, No. 22, 1063. — Results of sewage experiments with fine screens, activation tanks and Dorr thickeners at the testing station of the Sewerage Commission of Milwaukee are recorded in the annual report for 1918 from which this article is abstracted. The rate of activated sludge treatment was doubled by pre-screening. The Dorr thickeners reduced the sludge moisture to 98.5 per cent. — G. M. Fair.

Capacities of Small Septic Tanks. *F. E. Peters.* Munic. Jour., Nov. 22, 1919, 47, No. 21, 309–310. — A discussion of the requirements of various authorities relating to the capacity of septic tanks is followed by a résumé of the standards adopted by the State Board of Health of North Carolina for septic tanks used by schools, homes, and industrial plants. The standards relating to industrial plants are as follows:

Septic tanks for mills and similar industrial plants equipped with baths must have 25 gallons capacity per person up to twenty operatives, and 20 gallons per person above that number. Where baths are not provided, 20 gallons per person are required up to twenty employees, and 15 gallons per person after that. The minimum capacity of the tank under this ruling is 400 gallons. Seven and a half square feet of sand area are required per person for intermittent filtration of the effluent from the tank. — G. M. Fair.

Economic Values in Sewage-Sludge. Munic. Jour., Nov. 8, 1919, 47, No. 19, 278–279. — This is a review of Mr. Raymond Wells' paper read before the American Society for Municipal Improvements on November 12. The paper is printed in full in the Canadian Engineer, Dec. 25, 1919, 37, No. 26. — G. M. Fair.

Economic Values in Sewage and Sewage Sludge. *Raymond Wells.* Canad. Engin., Dec. 25, 1919, 37, No. 26, 563–566. — After a brief description of the methods applicable to utilizing the economic values in sewage sludge, the adaptation of the Cobwell process for the recovery of grease and the preparation of fertilizer is considered. Beginning with a sludge containing 3 to 3.3 per cent. ammonia and 10 to 15 per cent. grease on the dry basis and an initial moisture of 75 to 80 per cent., it is possible by this method to produce marketable grease and fertilizer sufficient in quality and quantity to defray the cost of operation. — G. M. Fair.

Treatment of Canning Plant Wastes in Wisconsin. *E. J. Tully.* Engin. N.-Rec., Dec. 11–18, 1919, 83, No. 21, 1017–1018. — The State Board of Health of Wisconsin has prepared general plans for treating the industrial wastes from canning plants. These wastes consist of washings, silage juice and cooling water. Different methods of treatment are recommended, depending upon the type of waste dealt with. The cooling water requires no treatment and should be separated from the other wastes. For the washings, screening, settling and straining through crushed stone are recommended. Silage juice, which is acid in reaction, is best treated with lime or soda ash, settled and passed through coke and gravel filters. It is also possible to treat both types of waste in a combined plant. — G. M. Fair.

Studies on the Treatment and Disposal of Industrial Wastes. 3. Purification of Tannery Wastes. *Harry B. Hommon.* U. S. Pub. Health Ser., Pub. Health Bull. No. 100, Nov., 1919. — A pamphlet of 133 pages dealing with the purification of tannery wastes. — K. R. Drinker.

INDUSTRIAL NURSING

The Visiting Nurse Association. Mod. Med., Oct., 1919, 1, No. 6, 507–508. — This suggestive editorial points out the development of visiting nurse associations and their success in solving the three fundamental problems of public health work, namely, clinical specialization, graded financial service so that the poor as well as the well-to-do may seek advice early, and intimate blending of prophylaxis and therapeusis. The medical profession still faces the satisfactory solution of these three problems in regard to itself. — A. B. Emmons.

Industrial Nursing. *Yssabella Waters.* Pub. Health Nurse, Sept., 1919, 11, No. 9, 728–731. — A brief review of the growth of industrial nursing in the United States since the appointment of a nurse by the Vermont Marble Company in 1895, and the rapid diverse development of industrial nursing service in factory, mine, logging camp and store. Miss Waters reports that at present 871 industries in the United States are employing 1213 graduate nurses. — Ida Cannon.

The Industrial Nurse and the National Organization for Public Health Nursing. Pub. Health Nurse, Dec., 1919, 11, No. 12, 987–989. — An interesting statement of the opportunities of the industrial nurse and the urgent necessity for more carefully trained women. Specialized training is needed. Many industrial nurses have not had this opportunity, but special lecture courses are available to many, literature on the subject is increasing, and, through the Committee on Industrial Nursing of the National Organization of Public Health Nursing, industrial nurses can promote their own development. "The local and state organizations offer frequent opportunities for mutual improvement, and with the help of the National Organization can eventually develop standards for industrial nursing, the observation of which will make industrial nursing by specially trained public health nurses a kind of service desired by every employer and employee." — Ida Cannon.

Notes on General Activities. The Committee on Industrial Nursing of the National Organization for Public Health Nursing. Pub. Health Nurse, Nov., 1919, 11, No. 11, 902–903. — Miss Florence S. Wright, the chairman of the committee, outlines a plan for securing the opinion of the industrial nurses of the country concerning the advisability of forming a special section for industrial nurses as part of the National Organization for Public Health Nursing. The next annual meeting is to be held at Atlanta, Georgia, April 12 to 17, 1920. — Ida Cannon.

Responsibilities and Opportunities of the Industrial Nurse. *Florence Swift Wright.* Pub. Health Nurse, Nov., 1919, 11, No. 11, 854–859. — A most suggestive and practical presentation of the opportunities of the industrial nurse who, through her contact with the foreign born in mine, mill, factory, store and home visiting, can interpret American standards and further health education. Miss Wright sees these opportunities as definite responsibilities. — Ida Cannon.

Pamphlets on Public Health Nursing. Pub. Health Nurse, Sept., 1919, 11, No. 9, 749–758. — The Library Department of the National Organization for Public Health Nursing calls attention to the packages of pamphlets on any phase of public health nursing, which may be borrowed on application to the librarian of the department at the New York office, 157 Fifth Avenue. Industrial nurses should take advantage of this opportunity. — Ida Cannon.

Notes From the Field. Pub. Health Nurse, Nov., 1919, 11, No. 11, 904–906. — A brief report is given of the discussion at the annual meeting of the National Safety Council in Cleveland in October, 1919, of the trained nurse in industry. — Ida Cannon.

The Future of Public Health Nursing in California. *Edna L. Hedenberg.* Pub. Health Nurse, Oct., 1919, 11, No. 10, 787–793. — In this article Miss Hedenberg pays tribute to the value of the nurse in industry and anticipates for her an increasing opportunity for furthering a better understanding between employers and employees. — Ida Cannon.

Study of the Public Health Nursing in Westchester County. *Zoe La Forge.* Pub. Health Nurse, Aug., 1919, 11, No. 8, 635–657. — This is a brief reference to industrial nursing as one of the

types of public health nursing found in the survey. The chief interest of the article to industrial nurses lies in the recommendations for better co-ordination of all public health interests, of which the health of the industrial worker is an important part. — Ida Cannon.

Nursing Work in the Telephone Companies. *Josephine Toering.* Pub. Health Nurse, Oct., 1919, 11, No. 10, 793–795. — In this article the author gives a brief statement of the organization of the medical service of the New York Telephone Company, the Bell Telephone Company of Pennsylvania, and the Chesapeake and Potomac Telephone Company, which comprise the Eastern Group of Telephone Companies. The nursing for all these companies is under the supervision of one nurse who has charge of the twenty-one nurses distributed throughout the three telephone companies. — Ida Cannon.

A Heart-Talk with Industrial Nurses. *Mary A. Meyers.* Pub. Health Nurse, Dec., 1919, 11, No. 12, 981–986. — A very frank and critical statement of the present standards of industrial nursing. Miss Meyers challenges the nurses who fail to live up to the best that the public health nurse should have to offer to industry, and makes clear the necessity for those who see the opportunities in industrial nursing to work together to formulate standards of service. — Ida Cannon.

INDUSTRIAL PERSONAL AND COMMUNITY HYGIENE: HOUSING, ETC.

The Town Plan and the Factory. *Louis B. Duff.* Canad. Engin., Dec. 18, 1919, 37, No. 25, 544–545. — A short discussion of the importance of logical planning for residential and industrial growth, and its bearing upon industrial progress and social gain. — G. M Fair.

State Aid for Workmen's Dwellings in Italy. U. S. Bur. Labor Statis., Month. Labor Rev., Oct., 1919, 9, No. 4, 282–283. — A brief review of a decree issued in Italy in March, 1919, providing for extensive state aid for the construction of workmen's dwellings. — K. R. Drinker.

INDUSTRIAL INVESTIGATIONS AND SURVEYS

Health Hazards of the Chemical Industry. N. Y. State Dept. Labor, Special Bulletin No. 96, Nov., 1919, pp. 69. — "The chemical industry in the State of New York has grown to such a degree and seemed to present so many dangers, both to the employer and employee, that an investigation was undertaken, by the Bureau of Inspection of the State Industrial Commission, to study those hazards which accompany the industry.

"Partly covering the industry, three hundred and thirty-five plants were visited and particular attention given to those conditions to which the present laws and rules do not apply, the following conditions being carefully studied, *viz.*: (1) The heating of factories with the fire hazards presented thereby; (2) Lighting of factories, and the location of switches, fuse plugs, and electric bells-particularly where inflammable liquids were used and the danger of explosion was present; (3) Tanks, particularly those in which there was the possibility of the generation of excessive pressure; (4) Hazards due to breaking up of raw materials; (5) Spontaneous combustion occurring in certain materials; (6) Industrial poisonings not reported to the Industrial Commission because they are not included in the list enumerated in Section 65 of the Labor Law; (7) Causes of explosions which occurred during the course of the investigation; (8) Lack of knowledge, by the men employed, of the character of the materials handled as shown by the careless modes of handling both raw material and finished products; and (9) General safe and unsafe practices."

The conclusion reached by the investigators, as a result of this survey, is that the general conditions found show the necessity for the drafting of a number of rules by the New York State Industrial Commission, which shall be placed into effect as law to remedy the various conditions which are dangerous to employee and employer alike. Recommendations for these rules are appended. — L. A. Shaw.

Wages and Hours of Labor in the Iron and Steel Industry, 1913, 1914, 1915, 1917, 1919. U. S. Bur. Labor Statis., Month. Labor Rev., Oct., 1919, 9, No. 4, 104–126. — An article containing statistics concerning hours and earnings of employees in the iron and steel industry during the years enumerated in the title. — K. R. Drinker.

Wages and Hours of Labor in the Boot and Shoe Industry: 1907 to 1918. U. S. Bur. Labor Statis., Bull. No. 260, Nov., 1919, pp. 135. — This report presents the rates of wages (or earnings) per hour, hours of labor per week, and full-time and actual weekly earnings in the year 1918 in the boot and shoe industry of the United States. Comparable figures for 1916 and summaries for each year from 1907 to 1918, except 1915 and 1917, are also shown. — K. R. Drinker.

Wages and Hours of Labor in the Coal Mining Industry in 1919. U. S. Dept. Labor, Bur. Labor Statis., pp. 20. — This article presents in a summary form the facts as to hours of labor and earnings of employees in the coal mining industry in 1919. No attempt was made to secure data from all mines or from all mining states. In the anthracite fields the survey was confined to twenty-two mines operated by ten different companies all located in Pennsylvania. Approximately one-tenth of all em-

ployees in the anthracite coal region are employed in these mines. Care was taken that the mines included in the survey were selected so that the results would be fairly typical of the entire anthracite field. In the bituminous territory the survey covered 201 mines situated in eighteen of the most important mining states. It included a total of 40,508 employees.

The article includes information concerning the hours and earnings of both inside and outside laborers in both anthracite and bituminous mines. For each occupation, i. e., inside or outside labor, data are given concerning the average hours actually worked during the payroll period, the average hours per week-day worked by employees in that occupation, full-time hours for the payroll period; the average amount actually earned during the payroll period, the average earnings per hour actually worked and the full-time earnings for the period. — K. R. Drinker.

Wages and Hours of Labor in the Slaughtering and Meat-Packing Industry, 1917. U. S. Dept. Labor, Aug., 1919, Bull. No. 252. — A report of 1114 pages dealing primarily with rates of wages, hours worked and earnings of employees by occupations for one payroll period in 1917, and describing the work of the employees in the various occupations. — L. A. Shaw.

Wages of Candy Makers in Philadelphia in 1919. U. S. Dept. Labor, The Woman in Industry Service, Bull. No. 4, June 28, 1919, pp. 46. — This report resulted from a request of the Women's Trade-Union League of Philadelphia that the Woman in Industry Service (United States Department of Labor) investigate wages in the candy factories of Philadelphia, on the ground that the earnings were reputed to be less than the cost of living. A complete survey of wages paid, condition of workrooms, hours of employment, processes in the industry, etc., was thus made. Suggestions follow as to remedies which should be instituted. — L. A. Shaw.

The Division of Industrial Hygiene offers Special Services to Employers. Week. Bull., N. Y. City Dept. Health, Dec. 6, 1919, 8, No. 48, 385. — The Department of Health announces that its Division of Industrial Hygiene is prepared to make a sanitary survey of factories, office buildings, etc., upon application from those interested. — L. A. Shaw.

INDUSTRIAL MANAGEMENT IN ITS HEALTH RELATIONS: SPECIAL TESTS IN THE SELECTION OF EMPLOYEES

A Statistical Study of Intelligence as a Factor in Vocational Progress. *K. M. Cowdery.* The Journal of Delinquency, Nov., 1919, 4, No. 6, 221–240. — This paper presents a study of the relations of measurable general intelligence to the ability to make progress under vocational instruction in various occupations. The subjects are delinquent boys, most of them from 14 to 18 years of age. The intelligence ratings are made by the Stanford tests. The vocational-progress ratings are based upon monthly reports made by the trade instructors and recorded, after being analyzed, upon a five-point scale. So far as possible, increased proficiency and skill rather than attitude, spirit, or the like, are used as the measurable quality.

The result is that little definite correlation is shown in the totals. For 516 ratings (twenty-four occupations grouped together) there is a positive correlation of 0.113 between intelligence quotient and vocational progress. But when the correlations are computed for different trade groups, different results are obtained. Taking the expert trades — the mechanical and the garment trades — the coefficient of correlation becomes 0.304. A coefficient of 0.705, found in the ratings for bindery work, appears to be the highest correlation found. In the culinary trades the correlation is −0.022, and for the agricultural details, −0.042, which appears to be the lowest point reached. Although part of the results are based upon comparatively small numbers of cases, the author thinks that some general conclusions are allowable. Distinct correlations must be admitted and in some cases *critical levels* are clearly defined, but it cannot be said that intelligence level is anywhere a trade test, in the sense of indicating those who will succeed to the exclusion of all others. The conclusion is offered that degree of mental ability can be a definite, measurable, negative guide in vocation, and that boys of certain levels of intelligence can properly be directed away from certain trades. The main need, finally, is for trade tests which will mark out the positive factors that assure success in specific directions. — G. E. Partridge.

The Army Intelligence Tests at Purdue University. *G. L. Roberts* and *G. C. Brandenburg.* School and Society, Dec. 27, 1919, 10, No. 261, 776–778. — Eleven hundred and fifty-nine students at Purdue University were examined — about 85 per cent. of the total student enrollment — and practically every student was sufficiently interested to come later for his score. Chemical engineers made the highest average; the average score for women students was eleven points lower than the score for men. As compared with the records of an unselected group — so far as the group of men subjected to the tests in the army can be called unselected — the students tested show a far higher level of general intelligence. — G. E. Partridge.

Point Scale Examinations on the High-Grade Feebleminded and the Insane. *Josephine N. Curtis.* Bulletin of the Massachusetts Commission on Mental Diseases, Jan., 1919, 3, No. 1, 79–105. — It was desired to "determine as accurately as possible the intellectual level reached by individuals

who had proven that they were just unable to get along by themselves in the world, and to ascertain for these cases the range of variation in intellectual ability." The child scale was unsuitable, since with it the highest grade subjects attained scores equal to those of normal subjects, and it was plain that not enough difficult tests were included in the scale to give chances for the subnormals to display their inferiority. Thereupon the preliminary form of the Yerkes-Rossy adult point scale was given to about thirty subjects, followed by a test made upon 200 additional cases. The results of the study concern exclusively the reliability of methods and scales, and the relations of methods to one another. — G. E. Partridge.

The Meaning of a Binet Score. *H. J. Humpstone.* The Psychological Clinic, Dec. 15, 1919, 13, Nos. 1–3, 18–26. — The author's criticism of the Binet tests is directed not so much against the work of Binet as against the use to which the tests have been put by American psychologists. Several fallacies are prevalent. Among them is the assumption that the mental age of the normal child can be used as a measure of the mental condition of the feeble-minded, which is not true, since there is a qualitative difference between the normal and the abnormal. The principal objection to the current use of the Binet methods is that they do not show definite competencies, and so are particularly ineffective when vocational guidance is in question. We need to be clearer about the precise function of mental measurement. The Binet score really records only a performance level on the intellectual scale. This is one element useful in giving a diagnosis of the child's mental ability, which may, however, be obtained without the use of a Binet test and in many cases in much less time than it takes to give the Binet test properly. However it is obtained, it is only one fact and no diagnosis is valid that is made upon it alone. — G. E. Partridge.

INDUSTRIAL SERVICE AND MUTUAL BENEFIT ASSOCIATIONS

Recreation in Industrial Communities. *A. H. Wyman.* American Physical Education Review, Dec., 1919, 24, No. 9, 473–480. — This is mainly a record of the activities of the Carnegie Steel Company in Pittsburgh, with a summary in the form of a table showing the facilities and the recreational activities in fourteen mill districts during four months of the outdoor season in 1919. Recreation in industrial communities has been more or less successful, the writer maintains, according to the social agencies that have fostered the movement. With the direct backing of the industrial managers much good has been done. There has been a noticeable change in the physical alertness of employees; through inter-departmental and inter-plant competition there has grown up a better spirit, a truer sportsmanship; the relations among heterogeneous groups of men have become closer; and there is more friendly feeling between workers and foremen and superintendents. — G. E. Partridge.

Community Recreation from the Point of View of Physical Education. *Florence D. Alden.* American Physical Education Review, Dec., 1919, 24, No. 9, 481–486. — "Ordinarily organizations for the furthering of recreation are supported in one of the following ways: entirely by the municipality, entirely by the community, partly by the community and partly by the municipality, or by the persons participating in the recreation features. The Public Athletic League of Baltimore is financed by a combination of almost all of these methods. . . . This varied support, together with the fact that the League owns no property but has its centers in public schools, parks, churches, old market halls, or any available spot, gives each center a personality all its own and makes it impossible to have any set pattern for its making and running." The paper contains practical advice for workers in this field. — G. E. Partridge.

Health Service Through Employees' Mutual Benefit Association. *Bert Hall.* Mod. Med., Oct., 1919, 1, No. 6, 499–505. — This article describes the activities and the benefits of a large Wisconsin employees' mutual benefit association. By prompt and early medical service, loss of time from illness has been reduced from 8+ days per man annually. A saving of 35.1 per cent. in the time lost was accomplished in one year, as shown by the chart. The financial savings thus made have been used for sick benefits, pensions, medical and nursing care of families. A women's auxiliary provided entertainments and neighborhood visiting. Mutual confidence and goodwill have been strongly cemented by this association. — A. B. Emmons.

INDUSTRIAL HEALTH LEGISLATION AND COURT DECISIONS: MALINGERING

Labor Legislation of 1919. Am. Labor Legis. Rev., Dec., 1919, 9, No. 4, 403–528. — A review of labor legislation, both federal and state. The *Analysis by Subjects and by States* shows a marked advance in health and safety legislation in many parts of the country. In private employment several states enacted or amended laws relating to hours of labor and types of work for women, Utah adopting an eight-hour day and North Dakota and Massachusetts establishing a forty-eight-hour week. In

several states legislation provided for continuation or part-time schools for employed children under a fixed age.

Among the most important legislation of the year was that by which Congress, through its taxing power, established a minimum age of 14 years for the employment of children in factories, and of 16 years for their employment in mines and quarries In several states there was a marked reaction against women remaining in undesirable occupations which, in some instances, they had entered as a war emergency. In Ohio women are prohibited from working as watchmen, section hands, jitney drivers, gas or electric meter readers, etc.

North Dakota enacted a compulsory compensation act, while three other states, Alabama, Missouri and Tennessee, enacted elective compensation acts. More than thirty states amended their compensation acts—in most cases so as to increase indemnities, extend their scope, or furnish more satisfactory medical service. In three states legislation gave blind workers the right to waive claims for compensation.

The question of vocational rehabilitation was given attention in a number of states. California provided for a fund which is to be administered by the Industrial Accident Commission to provide for the re-training of workers disabled in industry. A number of other states have taken a step in the same direction as California. — C. H. Paull.

A New Social Law. *Georges Vitoux*. Presse méd., Nov. 22, 1919, 27, No. 70, 1002. — The French senate has recently adopted without discussion an amendment to the law of 1898 fixing the responsibility for occupational accidents upon the employer, extending its scope to include the diseases of occupation also. "The occupational risk being that inherent in a given profession, irrespective of the negligence of employer or employee, this risk should be taken by the employer, and should figure as a part of the general expenses of operation." But the difficulty arises in judging just which are truly occupational diseases. The present legislation recognizes only plumbism and saturnism, but allows for the possibility of a future extension of the scope of the law. — T. J. Putnam.

Rules and Regulations Pertaining to the Painting Business. Mass. State Board of Labor and Indust., Indust. Bull. No. 13, 1919. — This pamphlet deals with rules and regulations pertaining to the painting business in Massachusetts. It contains also numerous suggestions for the safety of employees in the painting business and a section on suggestions for health of painters from the point of view of instituting habits of cleanliness, suitable diet, regular bowel movements, avoidance of dust, etc. — K. R. Drinker.

Requirements for the Care of Employees Injured or Taken Ill in Industrial Establishments. Mass. State Board of Labor and Indust., Indust. Bull. No. 14, 1919. — This is a brief pamphlet dealing with the minimum requirements for the treatment of persons injured or taken ill in industrial establishments in Massachusetts. In every establishment employing 100 or more persons at least one first-aid or emergency room suitably located and properly heated must be provided, where those injured or taken ill upon the premises may receive first-aid treatment or rest. Requirements are enumerated for size of such rooms, character of floor and wall, provision for ventilation, location as regards quiet and privacy, presence of a nurse or other person competent to render first aid, first-aid equipment, and means for heating food. — K. R. Drinker.

Loss of Eye Greater Than Loss of Sight. Jour. Am. Med. Assn., June 28, 1919, 72, No. 26, 1935. (Nelson *v.* Kentucky River Stone & Sand Co. (Ky.), 206 S. W. R. 473.) — The following is quoted from the above issue of the Journal of the American Medical Association:

"The Court of Appeals of Kentucky reverses a judgment that affirmed an award of the workmen's compensation board for the loss of an eyeball the same as for the loss of the sight of an eye. The court says that it must consider the case in the light of the board's finding that the man's eyeball was removed and he was compelled to wear a glass eye, but that neither of these things impaired his earning capacity beyond the loss of the sight of his eye, or caused a disfigurement that impaired his future usefulness, or occupational opportunities. The question therefore was whether the award conformed to the Workmen's Compensation Act, and this depended on whether the injury fell within the specific schedule providing compensation for the loss of the sight of an eye, or under the general provision applying to all other cases. In this connection, it must be borne in mind that disfigurement impairing the future usefulness or occupational opportunities of the injured employee is not an indispensable condition to compensation under the general provision, since that provision applies 'in all cases of permanent partial disability, including any disfigurement,' etc. Hence the adverse finding of the board on this phase of the question was not controlling. Looking at the Kentucky act, we find that it provides compensation at a certain rate for 'the loss of a thumb,' the 'loss of a first finger,' the 'loss of a hand,' the 'loss of an arm,' etc., thus showing that the compensation therein provided for was confined to the loss of the particular member named. When it deals with the eye, however, it does not provide for compensation for the loss of the eye itself, but solely for the 'loss of the sight of an eye.' If it be true, and there is no reason to doubt the soundness of the rule, that the purpose of the legislature was to confine the fixed compensation provided for specific injuries to those injuries and no others, and that the compensation allowed for a specific injury was not payable for a less injury, the rule should work both ways, and the compensation provided for a particular injury should not be held to include a greater injury. Here, the employee lost, not only the sight of his eye, but the eye itself.

His injury therefore was greater than the mere loss of the sight of the eye. That being true, his case did not fall within the schedule making compensation solely for the loss of the sight of an eye, but fell within the general provision awarding compensation 'in all other cases of permanent partial disability,' etc."

Loss of One Member Before Employment and One After. Jour. Am. Med. Assn., July 5, 1919, 73, No. 1, 59. (Wabash Railway Company *v.* Industrial Commission et al. (Ill.), 121 N. E. R. 569.) — The following is quoted from the above issue of the Journal of the American Medical Association:

"The Supreme Court of Illinois affirms a judgement for compensation under the workmen's compensation act for a total and permanent disability in a case in which a man whose left arm had been amputated near the shoulder was employed by the railway company as a night watchman and while so employed fell over a pile of scrap iron and injured his left knee, as a result of which injury tuberculosis of the bone set in and his left leg was amputated about 6 inches below the hip joint. The company contended that the loss of one leg does not constitute total permanent disability; but the man contended that the loss of his left leg, combined with the previous loss of his left arm, constituted permanent disability. The court says that this precise question has not arisen before in Illinois. It has arisen in some other jurisdictions under compensation acts similar to that of Illinois. In Massachusetts and New York it has been held that under such circumstances the disability occasioned is total and permanent. This court is disposed to follow the reasoning of the Massachusetts court construing a statute quite similar to that of Illinois, and to hold that the latter applies when the loss of one of the members mentioned occurred previous to the employment, and the loss of the other occurred as the result of an injury arising out and in the course of the employment. This, in this court's opinion, is the fair intent and meaning of the act. When this man was employed by the railway company, he had lost his left arm, and his capacity for work was to that extent impaired. He was employed to do work which could be performed by a man having but one arm, and he was paid on that basis. By the loss of his leg such capacity as he had for work was entirely destroyed, and under the provisions of the statute he was entitled to compensation for total permanent disability. Nor does such construction work any hardship on the company, as the man was employed and paid as a man of limited capacity, and the compensation which the company is required to pay is based on the wages it was paying him as a man of limited capacity. The fact that he may have been predisposed to tuberculosis of the bones did not affect the result, as the evidence showed that the tuberculosis of the left knee developed as a result of the injury."

WORKMEN'S COMPENSATION AND INSURANCE

Industrial Diseases and Workmen's Compensation. Note from Paris correspondent. Lancet, Nov. 1, 1919, 197, No. 5018, 801. — The following extract is taken from the above-mentioned issue of the Lancet:

"The Senate and the Chambre des Députés have just adopted a law placing industrial diseases on the same footing as accidents to workmen. The victims of disease will thus obtain the same benefits as those sustaining accidents, in so far as the responsibility of the employers is legally recognized for both. Insurance companies covering employers' liabilities will thus have to raise their tariffs once again." — K. R. Drinker.

Compulsory Sickness Insurance Propaganda. Report of the Committee on a Constructive Plan of Social Insurance, National Civic Federation. The National Civic Federation Review, Jan. 1, 1920, 5, No. 1, 6–7. — There is compulsory health insurance in ten European countries, in seven of which the insurance provides protection only for minorities, and in some cases only insignificant minorities, of the working people. In England the popularity of the measure is due to the fact that the working man pays only four-elevenths of his insurance, the rest being paid by the state and by the employer. Compulsory insurance has never resulted in any relative reduction in appropriations for direct poor relief. Available statistics show that the percentage of sick days has increased both in Austria and in Germany under compulsory insurance. — G. E. Partridge.

An Adventure in State Insurance. *A. J. Pillsbury.* Am. Econ. Rev., Dec., 1919, 9, No. 4, 681–692. — This article follows the development of compensation and insurance in California from the enactment of the Roseberry law in 1911 to the present time. The Roseberry law, the author points out, was crude and tentative, but it served the purpose of establishing the machinery for developing public interest and insuring the passage later of more effective legislation. The Workmen's Compensation Insurance and Safety Act of 1913 was the result of a careful study of insurance in different parts of the United States and of the world. This bill provided for a state compensation insurance fund which was to be used eventually in fair competition with other insurance carriers.

Among the objections to the establishment of a state insurance fund, which the writer meets, are:

1. The insurance field belongs to private enterprises.
2. Politics will get into the management of the fund.
3. Bad risks would fall to the state fund.
4. Private enterprise can do business cheaper.

In offering refutation to the last of these objections

the writer freely admits that it is probable that private enterprises can do business more cheaply than the state, but that they are apt not to, especially when they are not competing with the state.

Since the establishment of the state fund about 40 per cent. of the business of insuring risks covered by the compensation law has fallen to the state. The state fund has been able to " furnish insurance coverage to its patrons for one third less than it has cost those employers who placed their insurance with private insurance companies." Furthermore, there has been built up a reserve within the fund of $1,038,-958.96 to cover unusual risks.

The writer feels that the success of this " adventure in state insurance " warrants the assurance that, should the state at some future time assume risks not now provided for, it can administer added responsiblities with the same success as has marked its work as an insurance carrier up to the present time. — C. H. Paull.

INDUSTRIAL MORTALITY AND MORBIDITY STATISTICS

On the Hygiene of Transportation Workers. *S. Merkel.* Offentliche Gesundheitspflege, 1917, No. 7, 350–367. — This is mainly a statistical study of the mortality rate, the sanitary conditions and the diseases incident to transportation occupations; but the author has also presented valuable data for the study of the health conditions of a variety of occupations. The evidence on the whole is that transportation occupations are unfavorable to health. A table showing the frequency of diseases among transportation workers in Nürnberg indicates a very high rate of sickness. The accident rate in these occupations is also high. Long hours, exposure, fatigue, strains and the tendency to use stimulants contribute to the unfavorable conditions. The agreement of the transportation workers union with employers in 1910, seeking to remedy the conditions, is given in detail.

As is the case with many statistical studies of the hygienic factors in industry, it is difficult in regard to this one to distinguish between the effects of the occupation itself and the selective process by which its personnel is determined. It could remain a question, for example, whether the high percentage of ill health among drivers results from the insanitary conditions of their work or from the inherent qualities and native habits of the class of men engaged. — G. E. Partridge.

On the Proper Use of School Medical Statistics. *J. Priestley.* School Hygiene, March, 1919, 10, No. 1, 15–27. — The paper is of interest to any one who is concerned with the technique of medical statistics. Standardization of inspectors, the equal representation of inspectors in composite reports, and homogeneity of groups are the main factors considered. " The only safe procedure is to compare an inspector with himself, and this is the only method to be trusted to for really exact and scientific work." — G. E. Partridge.

ABSTRACT OF THE LITERATURE

OF

INDUSTRIAL HYGIENE

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CONTENTS

	PAGE
General	187
Systemic Occupational Diseases: Occurrence, Treatment and Prevention	188
Poisonous Hazards and Their Effects: Gases, Chemicals, etc.	189
Occupational Infectious Diseases: Occurrence, Treatment and Prevention	190
Occupational Affections of the Skin and Special Senses	190
Occurrence and Prevention of Industrial Accidents	192
Industrial Surgery	193
Malingering	195
Industrial Health Legislation: Workmen's Compensation and Insurance: Court Decisions	195
Rehabilitation of Disabled Employees	197
Industrial Mortality and Morbidity Statistics	198

GENERAL

SEVENTH ANNUAL REPORT OF THE SECRETARY OF LABOR FOR THE FISCAL YEAR ENDED JUNE 30, 1919. U. S. Dept. Labor, Washington Government Printing Office, 1919, pp. 304. — The sections in the 1919 report of the Secretary of Labor of interest in connection with industrial hygiene are those dealing with the organization of the Divisions of Industrial Hygiene and Medicine and of Safety Engineering, and the section devoted to minimum standards for children entering employment.

The function of the Division of Industrial Hygiene and Medicine, in the words of the report, " was to protect and improve the health of those employed in industry and thereby facilitate production. The program dealing with industrial health recognized two fundamentals — control over physical working conditions is in the hands of the management, and the approval and co-operation of workers are necessary to make equipment and regulations effective. Both workers and management may appreciate the value of good health, but the problem of what constitutes a sanitary work place, what processes and materials are harmful to workers, involve scientific research and determination by specialists. To furnish this scientific information and advice is properly the function of the government. The only effective and constructive method is to find out what conditions cause sickness and secure the elimination of those conditions. By such preventive methods industrial losses through sickness can be reduced and the field for curative methods minimized. The researches of the division, therefore, cover three main fields:

" 1. General hygienic conditions in industries in order to determine wherein existing conditions both within and without the plants comply with sanitary requirements.

" 2. Special occupational diseases and poisonings, to ascertain cause, effect, and prevention.

" 3. Physiological requirements of various occupations as the basis for developing methods of proper placement of workers with regard to physical ability."

The function of the Division of Safety Engineering was to reduce accident hazards in industry, a very important part of the work being to teach workers and to provide the information to secure intelligent safeguarding on their part.

The minimum standards for children entering employment, as given in the report, include the subjects of age minimum for different occupations, educational minimum, physical minimum, hours of employment, minimum wage, placement and employment supervision. — K. R. Drinker.

LABOR LAWS OF THE STATE OF CALIFORNIA, 1919. Bureau of Labor Statistics, State of California, pp. 261 with index. — This pamphlet is a compilation of the labor laws of the state of California including the

legislation passed at the 1919 session of the legislature. Digests are presented of the laws relating to apprenticeships, mechanics' liens and convict labor, and the more important decisions on labor laws are printed in full.

The sections of particular interest to the subject of industrial hygiene are those entitled Child Labor, Educational Rights of Children, Part-Time Education, Hours of Labor of Females, Hours of Labor and Days of Rest, Sanitation, Safety of Workmen, Workmen's Compensation, Insurance and Safety Act, and Vocational Re-education of Workmen. — M. Shorley.

Union Scale of Wages and Hours of Labor, May 15, 1918. U. S. Bur. Labor Statis., Bull. No. 259, Oct., 1919, pp. 295. — The title of this pamphlet describes in brief its contents. For details interested readers are referred to the original. — K. R. Drinker.

Minimum Wage Commissions, Current Facts, January, 1920. Compiled by *Mary W. Dewson* for the National Consumers' League, 44 East 23d Street, New York City. Pp. 15. — This pamphlet summarizes the main facts in regard to minimum wage legislation — which states and countries have it, why legislation is needed, what the best minimum wage laws provide, and how the laws are administered. — C. K. Drinker.

Third Annual Report of the Federal Board for Vocational Education, 1919. Washington Government Printing Office, 1919. — A report in two volumes. Volume I deals with the subject of vocational education, its progress and needs, giving a summary of its progress by states; while Volume II takes up the subject of vocational rehabilitation. — K. R. Drinker.

Health Hazards in the Industries of Niagara Falls, N. Y. *Paul M. Holmes.* U. S. Pub. Health Ser., Pub. Health Rep., Jan. 2, 1920, 35, No. 1, 1–20. — A request from the Employers' Association of Niagara Falls asking permission of the federal government to introduce women into shift work resulted in an investigation by the Woman in Industry Service of the Department of Labor upon (1) the hygiene and sanitation in the plants, with recommendations for correcting faulty conditions, and upon (2) the extent to which women might be employed if war conditions should necessitate their going into the plants in increasing numbers. Data and information obtained in this survey are herein given, with conclusions and recommendations. — L. A. Shaw.

Night Work in English Bakeries. U. S. Bur. Labor Statis., Month. Labor Rev., Oct., 1919, 9, No. 4, 147–149. — The above article is an editorial on the report of the British committee appointed "to inquire into the practice of night work in the bread baking and flour confectionery trade, and to report whether it is desirable in the interests of those engaged in the trade and of the community that the practice should be abolished or modified."

"The committee strongly recommends that wherever possible night work shall be abolished by agreement between employer and employee, but as it is improbable that such agreements could be obtained throughout the whole industry it recommends legislation making it unlawful to employ any person in the manufacture of bread or pastry between the hours of 11 P.M. and 5 A.M. Doughmen and oven firemen and their assistants who must necessarily begin their work a few hours before the regular force comes on are excepted from this prohibition, and careful provision is made to cover any emergencies or exceptional circumstances. Finally, in order to prevent any hardship which might arise from too sudden a change, it is recommended that such legislation shall not become effective until two years from its date of passage." — K. R. Drinker.

The Physician and Surgeon in the Industrial Era. *Otto P. Geier.* Surg., Gynec. and Obst., Jan., 1920, 30, No. 1, 44–49. — A splendid plea that the physicians and surgeons of America should take more interest in industrial medicine, emphasizing the reasons why an active participation in industrial medicine is important not only from the medical but also from the sociological and political points of view. — C. C. Lund.

Uses of Motion Pictures in Industrial Diseases. *Leslie W. Sprague.* Mod. Med., Oct., 1919, 1, No. 6, 496–498. — A discussion of the possibilities and the need of motion pictures for educational purposes in industrial medicine. — A. B. Emmons.

SYSTEMIC OCCUPATIONAL DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

Cancer: Facts Which Every Adult Should Know. U. S. Pub. Health Ser., Keep Well Series No. 6, 1919. — This is a small booklet covering the essential facts known to be effective in the control of cancer, and designed especially to acquaint lay readers with the early symptoms and seriousness of the disease in order that afflicted persons may act on this knowledge and place themselves in competent medical hands while the disease is still in a curable stage. — K. R. Drinker.

MENTAL

Success and Failure as Conditions of Mental Health. *William H. Burnham.* Ment. Hyg., July, 1919, 3, No. 3, 387–397. — For the prevention of mental disorder and the development of healthful

habits of mental activity, very simple things are the essential things, and one of these simple conditions is success. In the healthful development of the child and in the efficient activity of the mature individual, success and, to a limited extent, failure also are health conditions of fundamental importance. In its simplest terms, success means the association of reality with a mental image. We get satisfaction from matching that mental image with reality. From continued success through many years, an attitude of confidence is developed. Continued failure, on the other hand, is liable to develop an unsocial attitude, the shut-in personality, and to plant the seeds perhaps of mental disorder. Application of the psychology of success takes the sting out of worry; worry may even become a condition of success, and when we face our worries and analyze them, that very activity may destroy the worry itself. It is chronic worry that kills and not the brief and intense worry that soon ends in the grand and glorious feeling of success. Children should be trained and adult workers should train themselves to make their period of work one day, to live one day at a time.

Mental hygiene also has words of encouragement for those who fail. The help comes in the insight that, after all, the doing itself is the significant thing, that the fun is in the fight, and that the battle of life is worth making for its own sake. By becoming habituated to difficult situations we gain the insight that doing is itself worth while. Thus, even if the end result is apparently a failure, the whole effort is in itself successful. The need of success as a wholesome stimulus is universal. Children have an enormous appetite for it. They need large doses. Adults become depressed without it. It is vital for the normal. The diseased are often cured by it. The fact that you can do well certain things that are worth while gives zest to your life. — S. Cobb.

CIRCULATORY SYSTEM

Blood Pressure of Aviators. *Georges Ferry.* Bull. de l'Acad. de méd., Oct. 14, 1919, 82, No. 31, 188. Abstracted as follows in Jour. Am. Med. Assn., Dec. 6, 1919, 73, No. 23, 1804. — "Ferry explains the two main phases of aviators' asthenia, and comments on the depressing and sclerosis-inducing action on the human organism of aviation, and on means to stave this off as long as possible by rest, diuretics, epinephrin, and heart tonics."

POISONOUS HAZARDS AND THEIR EFFECTS: GASES, CHEMICALS, ETC.

The More Common Gases: Their Effect on the Respiratory Tract. (Observation in 2000 Cases.) *Robert S. Berghoff.* Arch. Int. Med., Dec., 1919, 24, No. 6, 678–684. — The author concludes:

"1. That gas victims, irrespective of the type of gas and severity of attack sustained, show no marked predisposition toward active pulmonary tuberculosis or toward the reactivation of a healed or quiescent pulmonary lesion.

"2. That gas victims present little evidence of material destruction of lung tissue.

"3. That gas victims with emphysema findings have a more protracted convalescence than those of the bronchitis group." — W. Herman.

Blood and Bone Marrow in Yellow Cross Gas (Mustard Gas) Poisoning. Changes Produced in the Bone Marrow in Fatal Cases. *E. B. Krumbhaar* and *H. D. Krumbhaar.* Jour. Med. Research, Sept., 1919, 40, No. 3, 497. — It is concluded that:

"1. Yellow cross or mustard gas exerts in the bone marrow a direct toxic action which, by depleting the leucocytes of the circulation, has an important bearing on the inability to resist secondary infection that is found in that form of gas poisoning.

"2. This toxic action in the bone marrow is shown not only by small areas of necrosis but by an inhibition of the regenerative process (chiefly of the leucogenetic series).

"3. Not only is the amount of regenerative hyperplasia inadequate to the severity of the process (as compared with the marrow hyperplasia of various acute infections), but also the quality is inferior; that is, the great majority of the hemopoietic cells present are of immature types." — W. Herman.

Mustard Gas. *E. K. Marshall, Jr.* Jour. Am. Med. Assn., Aug. 30, 1919, 73, No. 9, 684–686. — An article dealing with the extreme toxicity, the symptoms and systemic effects, and the mechanism of action of mustard gas (dichlorethylsulphid). — K. R. Drinker.

Poisoning with the Lethal War Gases (Physiology and Experimental Treatment). *Frank P. Underhill.* Jour. Am. Med. Assn., Aug. 30, 1919, 73, No. 9, 686–689. — An article dealing with poisoning with chlorin, phosgen and chlorpicrin, the cause of death, and the method of treatment. — C. K. Drinker.

Gangrene Following Carbon Monoxid Poisoning. *J. Emmons Briggs.* Jour. Am. Med. Assn., Aug. 30, 1919, 73, No. 9, 678–679. — In this article Briggs reports a case of extensive gangrene of the hands and feet involving skin, muscle, tendon, periosteum, bone and joints, and resulting from poisoning with carbon monoxid. The author cites also two similar cases previously reported in the literature. — K. R. Drinker.

Metabolism in Mercuric Chlorid Poisoning. *A. Barlocco.* Riforma Medica, Oct. 4, 1919, 35, No. 40, 845. Abstracted as follows in Jour. Am. Med. Assn., Dec. 20, 73, No. 25, 1907. — "Barlocco analyzes the findings of the intermediate metabolism in nine cases of acute mercuric chlorid poisoning. The

curve of azotemia rises and falls inversely to the diuresis."

NORMAL COPPER IN TOXICOLOGY. *L. P. J. Palet.* Semana Médica, Aug. 7, 1919, 26, No. 32, 151. Abstracted as follows in Jour. Am. Med. Assn., Dec. 20, 1919, 73, No. 25, 1909. — "Palet's research on fifty-four cadavers failed to confirm the presence of copper in the normal human liver. Incineration with magnesium oxide he found a simple and reliable means of investigating the copper content of tissues."

PRECAUTIONARY MEASURES TO PREVENT LEAD POISONING. U. S. Pub. Health Ser., Pub. Health Rep., Dec. 19, 1919, 34, No. 51, 2905–2907. — The office of industrial hygiene and medicine of the United States Public Health Service has recently concluded a survey of the pottery industry, located chiefly in Trenton, N. J., and East Liverpool, Ohio. The dust and fumes of lead cause more sickness among workers than is caused by any other metal. Over one-half of all the serious cases of metal poisoning are due to lead. Nine-tenths of all lead poisoning can be prevented by keeping dust and fumes from entering the mouth and nose of the worker. Rules are given which, if observed, are calculated to prevent all but an insignificant number of cases of lead poisoning. — L. A. Shaw.

OCCUPATIONAL INFECTIOUS DISEASES: OCCURRENCE, TREATMENT AND PREVENTION

STATUS OF PROPHYLACTIC VACCINATION AGAINST INFLUENZA. *G. W. McCoy.* Jour. Am. Med. Assn., Aug. 9, 1919, 73, No. 6, 401–404. — The author concludes: "The general impression gained from uncontrolled use of vaccines is that they are of value in the prevention of influenza; but, in every case in which vaccines have been tried under perfectly controlled conditions, they have failed to influence in a definite manner either the morbidity or the mortality." — K. R. Drinker.

TUBERCULOSIS FROM THE ANGLE OF AN EXPERT. *E. O. Otis.* Mass. Dept. Health, The Commonhealth, Sept.–Oct., 1919, 6, No. 5, 199–205. — An outline of the principles which the health officer, visiting nurse, and social workers should have as a guide in tuberculosis work. A reduction in tuberculosis lessens state expenses to such an extent that the campaign against tuberculosis has now come to be considered primarily an economic problem. — L. A. Shaw.

NEIGHBORHOOD ORGANIZATION VS. TUBERCULOSIS. *N. A. Nelson.* Mod. Med., Oct., 1919, 1, No. 6, 515–521. — This article describes the work of the National Social Unit Organization in a representative section of Cincinnati, in connection with which "a neighborhood organization has been built up which has led to an unprecedented neighborhood interest and co-operation."

"In the field of tuberculosis, the Unit Organization has succeeded, through its intensified service, coupled with the unusual neighborhood co-operation, in increasing total cases handled 373 per cent., new cases, 616 per cent., and cases carried over, 552 per cent. . . . Only 2.9 per cent. of its cases were lost through lack of co-operation; and from the point of view of age-groups reached, all data is undeniably in favor of the unit plan of organization, and all at a cost of nearly 50 per cent. less." — A. B. Emmons.

CLIMATE IN THE TREATMENT OF TUBERCULOSIS. Week. Bull. N. Y. City Dept. Health, Dec. 27, 1919, 8, No. 52, 409–413. — A discussion of the effects of climate as a factor in the cure of tuberculosis. — L. A. Shaw.

EFFECTS OF HOOKWORM DISEASE ON MENTAL DEVELOPMENT OF NORTH QUEENSLAND SCHOOL-CHILDREN. *J. H. Waite* and *I. L. Neilson.* Jour. Am. Med. Assn., Dec. 20, 1919, 73, No. 25, 1877–1879. — The authors report the results of a hookworm survey made by the state of Queensland, Australia, the Australian Institute of Tropical Medicine, and the International Health Board in the northern portion of the state of Queensland. Twenty-one per cent. of the total population and two-fifths of the schoolchildren were found to be infected. An investigation was undertaken aimed at measuring the mentality of a large number of infected children and then at comparing the results of the infected group with those of a non-infected group. From the results of their survey the authors conclude that hookworm disease in children produces measurable mental sluggishness, that mental development is retarded in proportion to the massiveness of the infestation, and that prolonged hookworm infection appears to produce cumulative mental retardation. — K. R. Drinker.

OCCUPATIONAL AFFECTIONS OF THE SKIN AND SPECIAL SENSES

A CASE OF CANCER FOLLOWING A SULPHURIC ACID BURN. *Daniel R. Mishell.* Jour. Am. Med. Assn., Dec. 27, 1919, 73, No. 26, 1936. — Mishell reports the case of a dye-worker whose hand was burned by a few drops of sulphuric acid in a factory accident. The initial burn left a small ulcerated surface which refused to heal. Three months later the patient noticed an increase in the size of the lesion. Growth continued until the tumor was excised seven months after the accident. Laboratory examination showed the tumor to be an actively growing squamous cell carcinoma. — K. R. Drinker.

Wounds of the Eye. *F. Lagrange.* Bull. de l'Acad. de méd., Nov. 11, 1919, 82, No. 35, 292. Abstracted as follows in Jour. Am. Med. Assn., Dec. 27, 1919, 73, No. 26, 1964.— "Lagrange shows that the gravity of injury of the eye depends on whether the ciliary region is involved or not. He says that any medical man should be able to enucleate the eye at need. Even when the foreign body is not in the ciliary body, if the eye is somewhat tender, and there is hypotony, and the nutrition is suffering, it should be enucleated, as also when there is old cyclitis with inflammatory reaction resisting appropriate treatment for several months."

Foreign Bodies Within the Eyeball. *John O. McReynolds.* Jour. Am. Med. Assn., Sept. 13, 1919, 73, No. 11, 818–824. — In the above article the author deals with the location and character of foreign bodies within the eyeball, and with measures of relief and their results. The article ends with the citation of illustrative cases. — M. Shorley.

The Maximum Physiologic Lymphatic Reaction in Deeply Penetrating Wounds of the Eyeball. *E. L. Jones.* Jour. Am. Med. Assn., Sept. 13, 1919, 73, No. 11, 826. — This article discusses the susceptibility of the eyeball to infection from penetrating wounds, and the value of massive mercuric cyanid injections as a method of treatment. — K. R. Drinker.

Burns of the Eye by Lime. Jour Am. Med. Assn., Dec. 6, 1919, 73, No. 23, 1769. — The following is quoted from the above journal:

"The increase in the use of chlorinated lime for household purposes has resulted in a somewhat greater prevalence of burns of the eye by this substance. During July and August some twenty cases were brought to the attention of the National Committee for the Prevention of Blindness. The circumstances in each case were that a sudden explosion of gas from the inside of the can followed the opening of the container, the shower of lime dust usually striking the eyes and face of the victim. In most cases, complete recovery followed, as medical care was usually provided immediately after the accident. The care of such cases usually includes anesthetization with a few drops of 1 per cent. solution of holocain or a 4 per cent. solution of cocain, and then the removal of the remaining particles of the lime. The irrigating fluid should be a weak solution of vinegar to neutralize the caustic effect of the lime. Subsequently, cold applications may be applied to the closed lids, and a mild antiseptic, such as a boric acid solution, dropped into the eye every two or three hours. If the burn is at all extensive, the conjunctival sac may be filled with an antiseptic ointment, which not only relieves the pain but also prevents the adhesion of opposing surfaces. The most serious and important sequel is the adherence of the lid to the globe (symblepharon) when there are two opposing raw surfaces."

Harvesters' Keratitis. *Chenet.* Médicine, Jan., 1920, 1, No. 4, 210. — The slightest excoriation of the cornea is liable to induce a serious corneal ulcer when there is infection in the lacrimal passages. Chenet reports eleven cases of this sort under observation during harvest time, all of whom required surgical measures and all had a certain amount of impaired vision. All the men had chronic lesions in the lacrimal passages. — K. R. Drinker.

The Ultra-Violet and Visible Transmission of Eye-Protective Glasses. *K. S. Gibson* and *H. J. McNicholas.* Technologic Paper of the Bureau of Standards No. 119, June 7, 1919, pp. 48. — In the above paper the authors report the results of the study of eighty-two samples of eye-protective glass in regard to their transmission of ultra-violet and visible radiant energy. For each specimen is given:

1. The trade name under which it is marketed.
2. The company from which it may be obtained.
3. The approximate color.
4. The thickness.
5. The per cent. transmission curve.
6. The total transmission factor for light of equal energy at all wave lengths.

A brief summary is given of the good or bad qualities of the various kinds of glass in comparison with colorless glass as regards protection against ultra-violet radiant energy. — K. R. Drinker.

Electric Accidents Affecting the Ear. *F. Nager.* Cor-Bl. f. schweiz. Aerzte, Nov. 20, 1919, 49, No. 47, 1778. Abstracted as follows in Jour. Am. Med. Assn., Jan. 17, 1920, 74, No. 3, 214. — "Switzerland has averaged from 50 to 100 serious electric accidents in the last few years and the number is increasing. Nager reports a case of injury of the ears from a live-wire accident, and summarizes four similar cases on record. Any part of the ear may be injured by the electric accident and the examiner afterward should bear this in mind as also the possibility of injury from the detonation alone, as the current is short-circuited. The detonation was regarded as the main factor in the personal case described, and the man was given 2,000 francs compensation for the unilateral cochlea injury."

Occupational Lesions in Nasal Septum. *A. Ranelletti.* Policlinico, Sept. 7, 1919, 26, No. 36, 1057. Abstracted as follows in Jour. Am. Med. Assn., Dec. 20, 1919, 73, No. 25, 1907. — "Ranelletti remarks that ulceration and perforation of the nasal septum are the characteristic occupational injury from the production of sodium chlorate by electrolysis from potassium bichromate. In the last three years he found this ulceration in the nasal septum in twenty-five of thirty-eight workers examined, including four with perforation. The thirty-one other workers also presented similar lesions, so that 56.5 per cent. of the sixty-nine workers in the factory had the ulceration, and in 15.7 per cent. of those affected there was perforation. This proportion is less than was reported by Hermann in Germany in 1900, where 79 per cent. of 257 workers were affected. A loose plug of salicylated gauze introduced into each nostril seems the best individual preventive known to date; cotton interferes with breathing."

OCCURRENCE AND PREVENTION OF INDUSTRIAL ACCIDENTS

Proceedings of the Fifth Annual Meeting of the International Association of Industrial Accident Boards and Commissions (Held at Madison, Wisconsin, Sept. 24–27, 1918). U. S. Bur. Labor Statis., Bull. No. 264, Oct., 1919, pp. 224. — This pamphlet contains a number of interesting papers dealing with the subject of industrial accidents. Among these are: Ohio's Plan of Reaching the Employer Through Monthly Statistical Reports, by Emile E. Watson; What Wisconsin Is Doing to Prevent Industrial Accidents, by G. H. Hambrecht; California's Accident Prevention Campaign, by John R. Brownell; What the New York State Industrial Commission Is Doing to Prevent Accidents, by James L. Gernon; The Vital Importance of Industrial-Accident Prevention in War Times, by Victor T. Noonan; What Pennsylvania Is Doing to Prevent Accidents, by Robert D. Young; What Massachusetts Is Doing to Prevent Accidents, by William W. Kennard; Accident Prevention in Industries in Ontario, by George A. Kingston; What Industrial Commissions Can Do to Prevent Accidents, by Sidney J. Williams; How Should Permanent Partial Disability Be Compensated, by John Mitchell; Arising Out of and in Course of Employment, by George A. Kingston; Amount of Exposure as Fundamental in Accident Study, by Lucian W. Chaney; Why Tabulate Noncompensated Accidents, by L. W. Hatch; The Use of Standard Accident and Compensation Tables, by W. H. Burhop; Should Medical Service Be Limited in Compensation Cases, by Charles H. Lemon; Better Treatment for Industrial Accident Cases, by P. B. Magnuson; Surgical Treatment to Prevent and Minimize Permanent Disabilities, by Francis D. Donoghue; Should Medical Service Be Limited in Compensation Cases, by Frederic M. Williams; Should Medical Services Be Limited in Compensation Cases, by Raphael Lewy; The Compensation of Disability Due to Pre-existing Disease, Aggravated or Accelerated by Accident or Injury, by Meyer Lissner; How Medical Questions Are Handled Under the Workmen's Compensation Act in the State of Washington, by J. W. Brislawn; How Medical Questions Are Handled Under Compensation Act in Massachusetts, by William W. Kennard; How Medical Questions Are Handled Under Compensation Law in New York State, by William C. Archer; The Need of Medical Statistics for Compensation Purposes, by F. H. Thompson; Selection of the Physician Under Compensation Laws, by John W. Mowell; Selection of the Physician in Compensation Cases, by Raphael Lewy; How to Deal with Crippled Workers, by T. Norman Dean; Conservation of Man Power and Rehabilitation of the Industrially Disabled, by Harry E. Mock; and Problem of the Crippled Man in Industry, by Carl Hookstadt. — M. Shorley.

Industrial Accidents. Bull. Penn. Dept. Labor and Industry, Series of 1919, 6, No. 1, pp. 277. — This bulletin consists of a series of tables covering industrial accidents reported to the Bureau of Statistics and Information of the Department of Labor and Industry of Pennsylvania during 1918. The tables are made up into four groups, one covering all accidents, one covering fatal accidents, one, compensation cases, and the fourth, a summary of accident data.

"The tables included in Group No. 1 cover a total of 184,844 accidents, including 3,403 fatal accidents, 53,783 cases of a serious nature, where the injury resulted in the loss of more than fourteen days to the injured person, and 127,658 cases of a minor nature causing disability of fourteen days or less. Of the 184,844 accidents covered in this group, 180,680 were cases where males were injured and 4,164 cover accidents to females. The 3,403 fatal cases include 3,379 accidents to males, and 24 accidents to females.

"The tables included in Group No. 2 give detailed information covering these 3,403 fatal cases and show the number which occurred in each county.

"In Group No. 3 the tables cover a total of 69,920 accident cases where compensation has been awarded and paid. Of this number 2,607 were fatal cases, and 67,313 of a serious nature, resulting in a disability of more than fourteen days. Of the 69,920 cases, 68,603 represent accidents occurring to males and 1,317 are female cases. The total amount of compensation paid, covering the 67,313 disability cases, was $4,780,-197, an average of $71 per case. The amount paid and awarded for the 2,607 fatal cases was $6,859,718, an average of $2,631.27 per case. The grand total of the amount paid and awarded in both disability and fatal cases was $11,639,915, or an average of $166.47 for each of the 69,920 accidents covered in these tables.

"Group No. 4 presents a summary of accident data." — K. R. Drinker.

War-Time Trend of Employment and Accidents in a Group of Steel Mills. *Lucian W. Chaney.* U. S. Bur. Labor Statis., Month. Labor Rev., Oct., 1919, 9, No. 4, 222–232. — This article contains data taken from the records of a group of steel mills for the years 1914 to 1918 and for four months of 1919, indicating the effect of war conditions on industrial activity and on accident rates.

After a decline in industrial activity in the iron and steel industry from the middle of 1914 into 1915, during which the curves of accident severity and frequency declined markedly, there came an upward rush of industrial activity, accompanied by an upward trend in the accident rates.

"The highest accident rates for disabling and nondisabling accidents were in the years terminating November, 1916, and January, 1917, while in (the accident) severity (rate) a first peak comes in the year ending January, 1917, with a second peak of the same altitude in the year ending December, 1918. It would thus appear that the calendar year 1916 may be fairly regarded as the summit of the accident wave."

"From the calendar year 1916 onward employment continues to rise, but less rapidly than during the period of adjustment to war conditions. At the same time a downward trend shows itself in all the accident curves. This continues, steadily in the disabling and non-disabling curves, irregularly in the severity curve, until the year ending January, 1918. From that point the severity curve tends to rise, with some irregularities, to the year ending December, 1918. While this rise in severity is going on the other curves continue their downward movement, recording in both cases a lower point than that reached in 1915." Suggestions are offered of possible causative factors to explain the rise in the accident severity rate simultaneously with a fall in the frequency rate. — M. Shorley.

Dangerous and Safe Practices in Bituminous Coal Mines. *Edward Steidle.* U. S. Bur. Mines, Miners' Circular 22, 1919, pp. 110. — This pamphlet consists of a series of photographs illustrating accidents in bituminous coal mining. Before the circular was prepared several reports of state mine departments were reviewed and a list of fifty of the daily accidents in bituminous coal mining compiled. Each of these accidents is illustrated in the circular by a series of three to five photographs showing the dangerous practice causing the accident and the result, and the proper and safer practice. With each series is a brief description setting forth the lesson taught. Besides the photographs of dangerous and safe practices, a number of general underground safety devices, such as mine signboards, are illustrated. — K. R. Drinker.

Plan of Safety Instruction in Public and Parochial Schools. *E. George Payne.* Published by the National Safety Council. — An outline of a method of teaching safety to schoolchildren. — C. K. Drinker.

INDUSTRIAL SURGERY

Care of the Wounded Man in War. *Anthony Bowlby.* Surg., Gynec. and Obst., Jan., 1920, 30, No. 1, 13–21. — A very valuable summary of lessons learned by surgeons during the great war as to the treatment of shock, fractures, and infected wounds. — C. C. Lund.

Débridement. *Dean D. Lewis.* Jour. Am. Med. Assn., Aug. 9, 1919, 73, No. 6, 377–383. — An article dealing with the application and results of débridement in the treatment of wounds. — K. R. Drinker.

War Wounds: Primary and Secondary Suture. *Eugene H. Pool.* Jour. Am. Med. Assn., Aug. 9, 1919, 73, No. 6, 383–387. — An article outlining the general principles and technique of primary suture, delayed primary suture, and secondary suture in the treatment of wounds of the soft parts, wounds of the face, and wounds other than those of the soft parts. — C. K. Drinker.

Primary Suture for Skull Wounds. *E. Chauvin.* Progrès médical, Sept. 20, 1919, 34, No. 38, 371. Abstracted as follows in Jour. Am. Med. Assn., Dec. 6, 1919, 73, No. 23, 1806. — "Chauvin reports eighteen cases with thirteen healing by primary intention after primary suture. The outcome is not known in the other cases or they are still under treatment; only one was still wearing the drain when discharged. He sutured without draining only in four cases, but he never left the drain in place for over three days."

Reconstructive Surgery of the Hand. *John C. Wilson* and *Clarence H. Hyman.* Jour. Am. Med. Assn., Dec. 13, 1919, 73, No. 24, 1811–1817. — The authors, in the above paper, consider the questions of injuries to the soft parts of the hand, tendon injuries, fractures of the carpus and of the metacarpal bone, joint involvement in hand injuries, amputations and the time of operation. The article ends with reports of cases of hand injuries, their treatment, and the results. — K. R. Drinker.

Joint, Nerve, and Other Injuries in War Surgery. *Robert Jones.* Surg., Gynec. and Obst., Jan., 1920, 30, No. 1, 1–12. — If a nerve is simply contused or compressed and has shown Wallerian degeneration, it will early show signs of recovery. Do not wait over two months before operation in an uncomplicated case. It is essential that the surgeon be experienced in neurological surgery to deal with these cases. No interval is too long between injury and operation to preclude recovery after suture. The state of the muscles, tendons and joints is the important factor. The nerve must be approached through normal tissue. Nothing is gained by surrounding the suture line with cargile membrane, vein or fat introduced from without. Bridging with catgut, etc., always has failed. End-to-end anastomosis offers the only hope of cure.

In cases of irreparable musculospiral or posterior interosseus damage, tendon transplantation is an unqualified success. It must, however, be associated with a good technique and careful re-education. Fractures of the femur, simple or compound, should be treated by the Thomas hip splint or the caliper splint. The leg should not be shortened to fill gaps in bone. An ununited fracture of the humerus should be treated by the step cut operation with long steps. Shortening here is unimportant.

In overcoming adhesions of joints and in subsequent manipulations, the joint should be put through its various movements only once. Voluntary movements can be safely allowed and should be encouraged. Flail-joints are frequently the result of excision. In order to preserve function, the extent

of excision should be small, the extension moderate and of short duration, and the after-treatment should aim at ankylosis. Treatment of flail-joints may consist of (a) removal of necrotic bone and scar tissue; (b) correct posture; (c) operative attempts at improved pseudo-arthrosis; (d) production of ankylosis; (e) retention in mechanical apparatus.

This article contains in condensed form the more important lessons that the British surgeons have learned during the war on certain aspects of nerve and orthopedic surgery. — C. C. Lund.

Surgical Problems in the Reconstruction of Peripheral Nerve Injuries. *Charles H. Frazier.* Ann. Surg., Jan., 1920, 71, No. 1, 1–10. — Dr. Frazier has had 550 peripheral nerve cases under his care at General Hospital No. 11. Two hundred and seventy-five have been discharged as recovered, seventy-five have begun to function spontaneously, 150 have been or will be operated on, and the remainder are under operation. He waits three months after the wound is healed to allow spontaneous recovery to begin before considering operation. This time will usually mean about six months from the time of injury.

Dr. Frazier has performed a neurolysis on 20 per cent. of the cases. This operation is clearly indicated when the nerve responds to faradic current. He almost routinely recommends resection and suture in the presence of a spindle-shaped neuroma. It is not good surgery to surround the nerve with transplanted flaps. The ideal bed for a nerve is the plane between a muscle sheath and deep fascia. It is often good to transplant a nerve from a region of scar tissue to such a plane. The flap operation, *suture à distance*, tubulization, and lateral anastomosis operations have been failures from the clinical standpoint, and the author has not used them. The operations used by the author are nerve suture, neurolysis, resection of humerus, nerve transposition and, rarely, nerve transplantation.

In nerve suture the ends of the nerves must be exposed and cut back to healthy fasciculi free from scar tissue. One tension suture of chromic catgut through the entire thickness of the nerve, one centimeter from the free end, with four to eight epineural sutures of the finest silk, suffices to keep the sheath in apposition. The sutures must not crush the ends together or be too loose. There must not be undue tension on the nerve. The after-treatment is of vital importance; massage, galvanism and later faradism, and properly selected exercises must be continued faithfully until voluntary movement has returned. — C. C. Lund.

Observations in Five Hundred Cases of Injuries of the Peripheral Nerves at U. S. A. General Hospital No. 11. *Charles H. Frazier* and *Samuel Silbert.* Surg., Gynec. and Obst., Jan., 1920, 30, No. 1, 50–63. — An illustrated and more detailed article by the same author on the same subject as the article abstracted above from the Annals of Surgery, January, 1920. — C. C. Lund.

A Study of the Causes of Delayed Union and Non-Union in Fractures of the Long Bones. *William L. Estes, Jr.* Ann. Surg., Jan., 1920, 71, No. 1, 40–46. — Estes discusses the various causes of non-union and delayed union. He calls attention to the suspension-traction method of Dr. Joseph A. Blake as a great improvement over former methods of treating compound comminuted fractures. The author thinks that if this method were applied to all cases of delayed union there would be practically no cases of non-union. — C. C. Lund.

Studies in Bone Growth. *F. H. Albee* assisted by *H. F. Morrison.* Ann. Surg., Jan., 1920, 71, No. 1, 32–39. — The authors, in their paper on the experimental and clinical stimulation of osteogenesis by means of triple calcium phosphate injections into the gap between the two ends of a fractured bone, come to the following conclusions: "Cases of fracture, with loss of substance, showed a much more rapid bone growth and union when triple calcium phosphate was injected into the gap between the bone ends than did the controls without its use." Callous formation was greater. "For our entire series of experiments the average length of time for union in cases of fracture treated with triple calcium phosphate was thirty-one days. The average length of time for union in the controls was forty-two days." No toxic or local irritant symptoms were observed from this treatment. — C. C. Lund.

The Treatment of Bone Cavities. *Walton Martin.* Ann. Surg., Jan., 1920, 71, No. 1, 47–61. — The author's summary is as follows:

"1. That complete removal of all the infected bone lining the cavity, of all foreign bodies and of every particle of dead bone is essential.

"2. That in the great majority of cases the cavity must be obliterated to insure healing.

"3. That this is most satisfactorily accomplished by the removal of sufficient portions of the wall of the cavity to allow the soft parts to fall in and fill it up.

"4. That in certain tunnels and cavities near joints some form of plugging may be indicated.

"5. That of the many materials used as plugs the free fat transplants present real advantages." — C. C. Lund.

Treatment of Burns. *G. E. McGeary.* Minnesota Medicine, Dec., 1919, 2, No. 12, 567. Abstracted as follows in Jour. Am. Med. Assn., Jan. 3, 1920, 74, No. 1, 59. — "The preparation used by McGeary is of a waxy consistency with a melting point of 120 F. The formula is: resorcinol, 10 parts; oil of eucalyptus, 20 parts; olive oil, 50 parts; petrolatum, 250 parts; paraffin, 670 parts. Melt petrolatum and paraffin together. Dissolve the resorcinol in alcohol and add to the petrolatum-paraffin mixture while it is hot, to drive off the alcohol. When cool, add the eucalyptus and olive oil."

THE PREPARATION OF THE SKIN FOR OPERATION WITH SOLUTION OF RUBBER AND ETHER INSTEAD OF TINCTURE OF IODINE. *Angelo Soresi.* Ann. Surg., Jan., 1920, 71, No. 1, 109–110. — The method of making this solution is described. The advantages claimed for it by the author are as follows: (1) It does not irritate the most delicate skin; (2) it necessitates less packing around the incision; (3) if adhesive is used, the dressing holds better. — C. C. Lund.

MALINGERING

A TRIAL FRAME FOR EYE MALINGERING. *Frank Allport* and *James R. Smith.* Jour. Am. Med. Assn., July 12, 1919, 73, No. 2, 105. — In the detection of eye malingering the authors have adopted the old method of inserting in a trial frame a "strong convex lens, which excludes vision at a distance of 20 feet, . . . over the patient's good eye, with a plano lens over his supposedly injured or amblyopic eye. Then, with both eyes open, the patient is asked to read the letters on the test chart. Any resulting vision is very evidently the vision which the patient obtains with the supposedly defective eye."

The trial frame used consists of a "reversible spectacle frame, with a plus 6 sphere on one side and a plano lens on the other. . . . There is a cross or X bridge which allows the glasses to be easily reversed and adds very much to the ease with which the test can be made." — K. R. Drinker.

INDUSTRIAL HEALTH LEGISLATION: WORKMEN'S COMPENSATION AND INSURANCE: COURT DECISIONS

WORKMEN'S COMPENSATION LEGISLATION OF 1919. Compiled by *Lindley D. Clark.* U. S. Bur. Labor Statis., Month. Labor Rev., Oct., 1919, 9, No. 4, 243–246. — This is a brief compilation of the legislation in the United States during 1919 on workmen's compensation. — K. R. Drinker.

MEDICAL AND HOSPITAL TREATMENT UNDER UNITED STATES COMPENSATION ACT. *John W. Trask.* Mod. Med., Oct., 1919, 1, No. 6, 489–495. — The author shows the difficulties of simply referring accident cases to hospitals for diagnosis and treatment, and states the advantages of the treatment of patients by one selected surgeon in each hospital. This method secures the personal interest of the surgeon, which is always necessary for the best results. The cheapest service in the end is found to be the best surgeon obtainable. A fee schedule is considered impracticable. Instead, a plan is outlined whereby the charges shall be reasonable for the service rendered. — A. B. Emmons.

WHEN EMPLOYER IS NOT LIABLE FOR MEDICAL SERVICES. Jour. Am. Med. Assn., July 5, 1919, 73, No. 1, 59. (Radil *v.* Morris & Co. (Neb.), 170 N. W. R. 363.) — The following is quoted from the above journal:

"The Supreme Court of Nebraska holds that, under Section 3661 of the Revised Statutes of Nebraska of 1913, as amended by the Laws of 1917, Chapter 85, Section 6, an employer, who offers to furnish without charge to an injured employee the reasonable services of a competent physician and medicines as and when needed, and within the value and for the time contemplated by the statute, cannot be held liable for such services by such employee, who has refused such offer by the employer and has obtained such services and medicines elsewhere. The court says that the plaintiff in this case sustained an accidental injury while in the employ of the defendant, and as a result of the accident a part of the second finger of his left hand was bruised and fractured and afterward amputated at the joint. He recovered an award from the compensation commissioner on account of the injury, and for $129 expenses incurred for medical and surgical treatment by a physician other than the one regularly furnished by the defendant. The plaintiff argued that, because an operation became necessary, he was therefore at liberty to make his own selection of a physician, and that the defendant became liable under the statute for the reasonable expenses so incurred. But the court is of the opinion that, the employer having been made liable for the services contemplated by the statute, it would seem from the language used that it must have been the legislative intent that he should be permitted to furnish a physician of his own choice, and if his selection is such as would satisfy a reasonable man under like circumstances, the employee would not then be heard to complain. This is the general rule in manufacturing centers, where employers' liability acts with provisions similar to those of the Nebraska act were in effect before the latter was adopted. It seems to the court that the plaintiff's conduct was in effect and within the meaning of the statute an unjustifiable refusal to allow the defendant to furnish the reasonable services and medicines that the act contemplates, and that the defendant was not therefore liable for the medical expenses that he incurred. Wherefore a judgment of the district court, which disallowed the bill for $129 for medical services, is affirmed."

RIGHT TO SELECT PHYSICIAN OR HOSPITAL UNDER WORKMEN'S COMPENSATION ACT. Jour. Am. Med. Assn., July 5, 1919, 73, No. 1, 58. (Leadbettor et al. *v.* Industrial Accident Commission (Calif.), 177 Pac. R. 449; Cella *v.* Industrial Accident Commission et al. (Calif.), 177 Pac. R. 490.) — The following is quoted from the above journal:

"The Supreme Court of California says, in the Leadbettor case, that the workmen's compensation act of that state (Section 15a) imposes on the employer the duty to provide medical, surgical and hospital treatment, and, 'in case of his neglect or refusal seasonably to do so,' makes him liable for the reasonable expense incurred by the employee in providing the treatment. The intent of the act obviously is that the employer shall, in the first instance, have the right to designate and select the physicians who are to give treatment to the employee. The latter is authorized to make his own selection at the expense of the employer only when the employer has neglected or refused to provide the necessary service.

"The District Court of Appeal of California, First District, Division 1, in affirming, in the Cella case, an order of the commission refusing to make an award in his behalf covering hospital charges, says that he was injured while in the employ of a company, and was told by the company's physician to go to the St. Francis Hospital. He did not do so, but went to St. Joseph's Hospital. He claimed that he did this through ignorance, being an Italian who could neither read, write nor speak English. However, the fact was clearly established that he was directed to go to the St. Francis Hospital and the address was given in writing. These facts did not show any neglect or refusal on the part of the company to furnish him hospital service. Yet it is clear that the commission could not make an award to him for such services except it be first shown that the company had neglected or refused to furnish such service. The commission did not exceed its jurisdiction in refusing him an award."

DUTY TO PROVIDE PROMPT EMERGENCY TREATMENT. Jour. Am. Med. Assn., Aug. 23, 1919, 73, No. 8, 632. (Fontanello *v.* New York Cent. R. Co. (N. Y.), 174 N. Y. Supp. 537.) — The following is quoted from the above journal:

"The Supreme Court of New York, Appellate Division, First Department, expresses a willingness to affirm a judgment in favor of the plaintiff, provided he is willing to reduce the verdict in his favor from $20,000 to $12,000, in this action that was brought, not for the original injury, but for the injury alleged to have arisen from the neglect of the defendant to provide prompt emergency treatment, by reason whereof the plaintiff's leg was necessarily amputated. The court says that while the plaintiff, a foreman for the defendant, was at work at a manhole, the cover of the manhole fell on him and broke his leg. That was between 9:30 and 9:45, or very near that time, in the morning. He was taken to an emergency hospital which the defendant had established, reaching it just after 10 o'clock. The physician whose duty it was to be there at that time had not arrived, having been delayed by the failure of his motor car. The assistant station master, who seemed to have charge, telephoned for him and found that he was not in his office, then tried to get another of the company's physicians, and finally telephoned to another hospital for an ambulance to take the man to that hospital, the assistant station master testifying that that message was sent between 10:20 and 10:30 A.M., while the surgeon connected with the other hospital, who came for the plaintiff, swore that the message was not received until after 11 o'clock. The testimony in the case further showed that, immediately on the happening of such an accident, infection sets in; that a wound with this liability to infection requires prompt, if not immediate, emergency treatment, and that the delay of only a few minutes may permit the development of that infection to such an extent as to require the amputation of the limb to save the patient's life. The evidence of the defendant's physician second sought was that he arrived at the hospital at 10:49 and gave to the plaintiff the necessary emergency treatment within a few minutes thereafter; but it seemed that the surgeon of the other hospital was there with the ambulance at nearly the same time, and immediately after the emergency treatment the plaintiff was taken to that hospital. The jury found, on what the court must deem was sufficient evidence, that the delay of approximately an hour at the emergency hospital permitted the infection so to develop that it became necessary, by reason thereof, to amputate the plaintiff's leg. It also found that the defendant had not used reasonable care in providing prompt emergency treatment. For the negligence of the first physician in failing to get to the emergency hospital the trial judge correctly charged that the defendant was not liable. The liability found by the court below was placed on the negligence of the assistant station master in charge of the emergency hospital in failing for an hour to send for an ambulance from the other hospital. A corporation must always act through its agents, and public policy would seem to require that in the providing of prompt service, when prompt service may be vital to the welfare of the patients, as well as in the providing of competent surgical and nursing attention, such an institution is under the duty to use reasonable diligence. Such a duty is not one that can be delegated, but is one which rests primarily and always with the institution, and for the negligence of the assistant station master in failing to provide prompt emergency treatment in this case the defendant was properly held responsible."

REPORT OF THE PENNSYLVANIA HEALTH INSURANCE COMMISSION. Editorial. Jour. Am. Med. Assn., Sept. 13, 1919, 73, No. 11, 858–859. — The following is quoted from the above journal:

"The report of the Health Insurance Commission of Pennsylvania, just issued, is necessarily a limited one. The commission was directed by the act of July 25, 1917, to investigate 'the extent, loss and causes of sickness and accidents of employees and their families not covered by the workmen's compensation act; the adequacy of the present methods of treatment and care of such sickness or injury; the adequacy of the present methods of meeting the losses caused by sickness or injury, either through insurance or otherwise; the influence of working conditions on the health of employees, and the meth-

ods of sickness prevention with a view to recommending ways and means for the improvement of the health of employees and their protection against sickness and accident,' and for all this work the legislature provided the liberal appropriation of $5,000. Naturally, the commission was not able to make any investigation, but confined itself to collecting and arranging material gathered by other agencies. It reports that there are constantly ill in the state more than 385,000 employees, of whom approximately 140,000 are subjects of severe illness and 245,000 less serious. The average loss of working time on account of sickness is at least six days per annum for each employee. . . .

" Regarding financial loss due to sickness, the commission estimated the wage loss to employees at $33,000,000 a year. The losses to employers consist of decreased production and cost of labor turnover. During the influenza epidemic, anthracite coal production in Pennsylvania, the largest coal producing state in the Union, dropped 500,000 tons in a few days. The losses to the community consist of direct money loss and social loss. The state spends more than $6,000,000 each year directly for the treatment of sickness, and $4,000,000 for the maintenance of institutions for the care of defectives. In addition to public institutions, 175 hospitals report that, in 1916, 57 per cent. of their patients were treated free. The commission finds that wage earners are not receiving satisfactory medical care. Hospital accommodations in the state average a little more than one-half the recognized minimum of five beds per thousand. Approximately one-fourth of those actually disabled by sickness never receive medical care. Insurance protection against sickness was found among only 30 per cent. of employees. The lower the wage group, the least likely the insurance protection. Such insurance as was carried seldom provided proper medical care. Lodges, fraternal societies and trade union funds afford little better protection.

" The commission is of the opinion that industry is clearly responsible for a large proportion of the illness among employees; that fully one-half of the existing sickness could be eliminated by proper preventive methods; that from 70 to 75 per cent. of the schoolchildren of the state are physically defective, and that most of the defects are or were correctable; and that a large number of communities in the state have no active health work nor adequate appropriations for health activities. Regarding responsibility, the commission holds that this rests on three groups, the community, the industry and the individual, and that at present these groups are meeting the losses for illness in unequal share. The burden on the individual is often disastrous and out of proportion to his individual responsibility or ability to carry it, and some means of a just distribution of this burden should be found. There is in Pennsylvania today, in the opinion of the commission, urgent need for a program that will provide efficient care for employees and their families when ill and preventive measures that will as far as possible prevent illness and increase the health and vigor of the citizens of the state. No definite health insurance measures were recommended by the commission. Instead, it recommended that a new commission be appointed to continue the investigation and to study proposed and existing schemes of health insurance in this and other countries with a view to formulating definite measures. The appropriation of $5,000 for such a commission was, of course, ridiculously inadequate. The problem as shown by the report of the commission would justify the expenditure of any amount of money for a clearer understanding or a solution of the problem."

REHABILITATION OF DISABLED EMPLOYEES

Reconstruction of the Disabled. Am. Jour. Care Cripples, June, 1919, 8, No. 6, 405–474. — This issue of the American Journal of Care for Cripples contains a number of interesting articles on reconstruction work among disabled soldiers. Among these are: Experience in the Re-education of Disabled Soldiers in Great Britain, by Douglas C. McMurtrie; Re-educational Work Among the Serbs in France, by Aline S. Atherton-Smith; The Re-education of Blinded Soldiers, by Professor Francesco Denti; Occupational Therapy, by Major Bird T. Baldwin; Lessons from Reconstruction Hospitals, by Captain L. A. Pechstein; The Employment Office for the Severely Disabled of the Third Army Corps and the Province of Brandenburg, by Drs. W. and H. Beckmann; Vocational Guidance and the Provision of Employment for the Tuberculous, with Special Reference to the War Disabled, by Dr. Freudenfeld. The article by Professor Denti is a translation from the Italian, while the last two papers are translations from German articles. For greater detail, interested readers are referred to the originals of these various papers. — M. Shorley.

Practical Experience in Dealing With Industrial Cripples. *Dudley M. Holman.* Am. Jour. Care Cripples, June, 1919, 8, No. 6, 438–441. — In this paper the author discusses the question of the re-education of industrial cripples, citing examples of injured men who, by re-education after injury, were enabled to earn even better wages than before their accidents. The main point which Mr. Holman emphasizes is his belief that the re-education of industrial cripples is not a job for the federal government but as a matter of policy and of business principle should belong to the insurance carriers. He believes that by spending money freely on the thorough treatment of industrial cripples by the best surgeons and in the best hospitals, and by subsequent re-education insurance carriers will not only return men to useful and self-supporting work but will, in the end, save money for themselves. — K. R. Drinker.

INDUSTRIAL MORTALITY AND MORBIDITY STATISTICS

Bituminous Coal Mine Fatalities in Pennsylvania, 1914 to 1918 Inclusive. U. S. Bur. Labor Statis., Month. Labor Rev., Oct., 1919, 9, No. 4, 233–234. — This article is a brief review of an analysis of bituminous coal mine fatalities in Pennsylvania for the five-year period, 1914 to 1918, recently made under the direction of the state insurance department and based on the records of the Department of Mines. A table is given showing the production of bituminous coal mines in Pennsylvania and the fatality rates per thousand 250-day workers and per million tons mined during the years 1914 to 1918. "During this five-year period 57.2 per cent. of the fatalities were caused by falls of roof and coal, and 26.1 per cent. were chargeable to mine haulage.

"A table of compensation costs covering the period, 1916 to 1918 inclusive, shows a total of $2,800,737 paid in benefits on account of 732 fatalities and 456 permanent disabilities. Of the total of 281 specific injuries, 154, or 54.8 per cent., involve injury to eyes." — K. R. Drinker.

SUBJECT INDEX TO VOLUME I

This is a subject index to all the reading matter in the ABSTRACT OF THE LITERATURE OF INDUSTRIAL HYGIENE and one should, therefore, look for the subject word. The name of the author follows the subject entry in brackets.

For author index see page 212.

PAGE

ABILITY, hierarchy of (Thomson) 97
proof or disproof of existence of(Thomson) 97
ABRASIVE industry, dust hazard in (Winslow, Greenburg, and Greenberg) 69
ABSTRACTS, subject headings for 5
ABSTRACTORS and reviewers 5
ACCIDENTS, *see also* under Safety, specific occupations and specific parts of the body.
ACCIDENTS and employment in group of steel mills (Chaney) 192
boards of, reports, *see* individual states.
defense against dangerous articles (Dunn) 148
electric, affecting the ear (Nager) 191
industrial, analysis of 216 cases (Scheffel) 70
industrial, causation and prevention of (Vernon) ... 54
industrial, library's part in reduction of (Liebmann) 129
industrial, in Pennsylvania in 1918 192
industrial, responsibility for 55
International Association of Industrial Accident Boards and Commissions, proceedings of fifth annual meeting of 192
ocular, *see* Eye accidents.
overwork, a cause of 107
prevention of, and safety first (Bellhouse) 164
prevention of, illustrated lectures to workmen (Bonsib) 55
prevention of, shipping containers (Beistle) 175
prevention work (Heyne) 129
rates in machine building, influence of war on (Chaney) 98
reducing risks of 23, 55, 71, 129
reduction of, at N. Y. Navy Yard 107
risks, intensive production and 163
ACID burns, emergency treatment of, by baths 108
hydrocyanic, *see* Hydrocyanic acid.
mixed, rupture of cast iron in contact with (Cummings) 22
picric, *see* Picric acid.
sulphuric, *see* Sulphuric acid.
AGRICULTURAL education 101
AIRCRAFT works, doping in (Smith) 105
ALABAMA, control of venereal disease in 106
ALCOHOL and alcoholism, relation of, to maternity and child welfare (Scharlier) 177
and crime (Rowe) 103
AMERICAN Federation of Labor, report to Federation of Trade Unions 143
Federation of Labor, resolutions on scientific research 100, 143
Psychological Association, twenty-seventh annual meeting of 102
Public Health Association, discussion of problems of industrial hygiene at meeting of 33
Society for Control of Cancer, handbook of, for medical profession 144
Society for Control of Cancer, popular leaflets of 66
Society of Mechanical Engineers, annual meeting of 7
AMERICANIZATION in industries, national conference on (Carney) 143
ANILIN as poison in shoe dye (Hudson) 9
dye manufacture, poisoning in (Hamilton) 37
ANTHRAX in a soldier (Norton and Kohman) 22
precautions for preventing infection from 89
Seymour-Jones sublimate-formic acid method for disinfecting anthrax-infected furs and skins (Gegenbauer) 11
ARCHITECTURE as a factor in civilization (Chaund) .. 142
ARKANSAS bureau of labor, report of, 1917–18 48
ARM prosthesis (Putti) 91

PAGE

ARMY, disciplinary problems of (Adler) 171
epidemiology of sputum-borne diseases and relation to health of national forces (Vedder) 10
feeding scientifically balanced ration to, practicability of (Anderson) 133
food consumption in training camps of U. S. Army (Murlin) 133
personnel work, implications for education and industry (Bingham) 59
rations, acid-base balance of (Blatherwick) 133
ARSENIC, diagnostic symptom in polyneuritis from (Mees) 38
normal content of arsenic, zinc, and copper in human body (van Itallie) 104
poisoning from coal products (Bayet and Slosse) .. 161
poisoning in coal industries (Bayet and Slosse) 66
ARSINE, pharmacology of (Joachimoglu) 146
ATMOSPHERIC pollution, report of British committee for investigation of 106, 165, 166
ATROPINE as diagnostic agent in typhoid (Marris) ... 89
AVIATORS, blood pressure of (Ferry) 189
tests of aptitude for flying (Henmom) 97

BACK injuries, disability from, following industrial accidents (Sever) 148, 164
pain in military service (Sherwood and Jones) 56
strains, treatment of (Marshall) 56
BAKERIES, night work in 188
night work in, reasons for abolishing (Iffland) 158
regulations governing 44
BAKING, a vocational opportunity for the disabled ... 139
BANKHEAD SMITH BILL for promoting rehabilitation of disabled civilians 82
testimony on (McMurtrie) 82
BEDBUG, observations on life of (Hase) 103
BELTING, shafting and pulleys, protection of 39
BENZINE, lead, and turpentine poisoning, frequency of, in 402 painters (Harris) 52
poisoning, with report of chronic case (Haden) 145
BENZOL, action of, diphasic leucopenia as a polynuclear amphophile phenomenon (Weiskotten and Steensland) 37
BERI-BERI, deficiency theory of, in light of clinical and experimental observations, with account of 40 cases (Walshe) 150
BLIND, experiment in employing (Wolf) 31
soldier, governmental provision for (Bradley) 62
soldier, St. Dunstan's and (Martin) 82
victory over blindness (Pearson) 82
BOILS, *see* Furunculosis.
BONE cavities, treatment of (Martin) 194
growth of, studies in (Albee assisted by Morrison) .. 194
BOOT, *see* Shoe.
BRITISH committee for investigation of atmospheric pollution, report of 106, 165, 166
health of munition workers committee, report on industrial health and efficiency 84
Industrial Safety First Association 23
BUILDING trades, training courses in safety and hygiene in 129
BULBAR SYNDROME of coal miners (Benoit) 123
BURNS, acid, emergency treatment of, by baths 108
dichloramin-T and petrolatum dressing for (Sollmann) 24
of the eye by lime 191
sulphuric acid, with cancer following (Mishell) 190
treatment of (Fauntleroy and Hoagland) 108

PAGE

BURNS, treatment of (McDonald) 40
treatment of (McGeary) 194
treatment of, by picric acid (Thorpe) 108
treatment of, in "employee No. 1653" 109
BUSINESS training for engineers and engineering for business students 63

CAFETERIA, technical features of (Blum) 137
CANCER (Howe) 66
facts every adult should know in regard to 188
following sulphuric acid burn (Mishell) 190
handbook of American Society for Control of Cancer, for use of medical profession 144
occupational (Glibert) 163
occupational (Ross) 11
popular leaflet of American Society for Control of . . . 66
poster of National Safety Council for industrial use 123
CANDY industry, the public and 114
makers, wages of, in Philadelphia 182
CANNING plant wastes, treatment of, in Wisconsin (Tully) 180
CARBON dioxide, calibration of dock laborer by means of his CO_2 discharge: cost of mechanical work in terms of CO_2 expired: CO_2 ordinate of a dock laborer during six days' work (Waller) 41
monoxide, determination of, in blood (Van Slyke and Salvesen) 173
monoxide, method of detecting (Desgrez and Labat) 88
monoxide poisoning (Lanza) 37
monoxide poisoning followed by gangrene (Briggs) . . 189
monoxide poisoning, present ideas of (Balthazard) . . 88
CARDIAC disease, new diagnostic methods (Benjamin and Brooks) 20
CARDIOVASCULAR service, physical exercises in (Smith) . 8
CEMENT inhalation and its effect upon tuberculous lungs (Nagai) 146
CERAMIC and porcelain industry, health of workers in 142
CHEMICAL industry, health hazards of 181
CHENOPODIUM, poisoning by oil of (Ryhiner) 125
CHILD labor and school attendance (Clopper) 111
labor, enforcement of international labor standards relating to (Swift) 165
labor laws, administration of, in Maryland (Bird and Merritt) 134
labor, Quebec industrial establishments (amendment) act concerning 60
labor, report of national committee on (Chandler) . 152
labor, state laws concerning 57
welfare and maternity, relation of alcohol and alcoholism to (Scharlier) 177
CHILDREN, employment of, in agriculture 41
employment of, in England 111
filling in gaps of child life (Gebhart) 178
in factory life (Skinner) 134
in industry, health supervision of (Barth) 57
of women in industry, welfare of 111
school, comparison of nutrition in (van der Loo) . . . 25
school, effects of hookworm disease on mental development of (Waite and Neilson) 190
school, is undernourishment of schoolchildren determinable? (von Ziegenweidt) 25
school, malnutrition in (Averill) 71
standards for protection of 111
CHLORATES (Griswold) 131
CHLORINATION of water, field methods for (Georgia) . 178
CHLORINE, effects of, on isolated bronchi and pulmonary vessels (Barbour and Williams) 146
gassing, influence of morphine upon fatality of (Barbour, Hjort, and Taylor) 149
gassing, treatment of, with circulatory stimulants (Barbour) 146
CHLOROFORM and phosphorus poisoning, protective action of carbohydrate diet in (Simonds) 21
CHROME poisoning (Lührig) 125
CIRCULATION, tests of functional capacity of (Kahn) . . 37
CITY, *see also* under Town.

PAGE

CITY, France's first city planning law (Williams) 166
CLASSIFICATION of men, principles underlying (Kelley) 59
CLEANLINESS attracts high-class workmen (Moore) . . 37
CLERKS, office, standardized test for (Thurstone) 154
CLEVELAND, report of Cleveland and Elyria cripple surveys (Stern) 31
CLINICS, after-care clinic in Oregon (Douglas) 46
industrial medical and dental, in women's garment trades (Price) 42
COAL industry commission, report of 35
mines, *see* Mines, coal.
miner, *see* Miner, coal.
pulverized, instructions for safe use of 40
COKE-OVEN accidents in U. S. during 1917 (Fay) . . 12, 90
COLLEGE, *see* Education.
COLORADO industrial commission, report of 51
COMMUNITY health service in Iowa (Bailey) 113
larger community life needed (Lee) 115
service as builder of morale (Halbert) 114
service in Chester (Samuels) 115
service through schools (Weller) 115
COMPANIES
Alanwood Iron and Steel Company, sewage disposal plant at industrial housing development of (Robinson) 42
American Pulley Company, health program of (Sawyer) 44
American Rolling Mill Company, medical service of, pays big dividends (Smith) 27
Cammell Laird and Company, mask and protecting garment for welders 165
Carnegie Steel Company, recreational activities of (Wyman) 183
Disston (Henry) & Sons, Inc., technical features of cafeteria of (Blum) 137
Du Pont de Nemours & Company baths for the emergency treatment of acid burns 108
use of safety engineering by, reduces cost of construction 164
Eastman Kodak Company, cancer leaflet for distribution to employees of (Howe) 66
Ford Motor Company, work of sick and crippled men in (McLeod) 30
Greenfield Tap and Die Corporation, savings through plant dispensary of (Seller) 42
Holley Carbureter Company, value of cleanliness in workshop of (Moore) 37
Holtzer-Cabot Electric Company, cost of first-aid department of 42
LeBland (R. K.) Machine Tool Company, shop dental dispensary of (De Hoit) 136
Miller Lock Company, experience of, in employing the blind (Wolf) 31
Montgomery Ward & Company builds employees' health (King) 28
Norton Company, health supervision by (Weber) . . . 14
Peoples Gas Light and Coke Company, welfare work of (Armstrong) 154
Retail Credit Company, plan of, for keeping workers fit (Richter) 136
Western Electric Company, health protection in plant of (Robinson) 44
COMPENSATION, *see also* under Workmen's Compensation Act.
COMPENSATION bureau of N. Y., review of report of . . . 28
for cardiac disease in soldiers, basis of (Gittings and Smith) 29
for occupational diseases in U. S. and foreign countries (Hookstadt) 61
for successive injuries, who shall bear cost of total disability caused by (Little) 45
in occupational disease, limitations of (Andrews) . . . 17
CONNECTICUT bureau labor statistics, report on labor conditions 36
bureau labor statistics, report on occupational diseases 36
labor laws of 60
legislation concerning venereal disease 70

PAGE

Conscription, eugenic aspect of (Johnson) 64
Copper, normal content of zinc, copper and arsenic in human body (van Itallie) 104
normal, in toxicology (Palet) 190
Creatin, creatinin and (Wahl) 24
Creative instinct in workers, satisfaction of 16
Crime, alcohol and (Rowe) 103
Cripples, industrial consequences of permanent disability 118
industrial, experience of handicapped workmen in Wisconsin (Hambrecht) 46
industrial, possibilities of sustaining second injury (Hookstadt) 46
industrial, practical experience in dealing with (Holman) 197
industrial, returning to normal (Upham) 62
plan to prevent discrimination against 118
problems of, in industry (Hookstadt) 30
problems of the partially disabled in war and industry (Chubb) 17
rehabilitation of, *see* Rehabilitation.
report of Cleveland and Elyria cripple surveys (Stern) 31
reshaping tool handles to be used by crippled hands (Shufeldt) 31
shall ambitious cripple suffer loss of workmen's compensation benefits? (Hookstadt) 46
what sick and crippled men are doing for Ford Motor Co. (McLeod) 30
Cyanide poisoning and its treatment (Fühner) 145

Débridement (Lewis) 193
Dental mechanics, a vocational opportunity for the disabled 139
service in factory (Elliott) 58
shop dispensary (De Hoit) 136
Dentists co-operate in venereal disease control 148
Dichloramin–T and petrolatum dressing for burns (Sollmann) 24
Diet, American military hospital dietaries (Hoskins) 133
type of, studies on influence of (Abderhalden) 133
Dinitrobenzol poisoning (Steiner) 21, 125
Disabled, *see also* under Handicapped.
Disabled, opportunities for, in dental mechanics, baking, and podiatry 139
reconstruction of 197
rehabilitation of, *see* Rehabilitation.
training and placing of (Sawyer) 80
work of federal board for vocational education in assisting 29
Disease, epidemiology of sputum-borne diseases and relation to health of national forces (Vedder) ... 10
occupational, *see* Occupational disease.
prevention and care of the sick (Stimpson and Foster) 49
transmission by indirect contact, with report of laboratory research (Cummings) 54
Dispensary, plant (Selby) 27
plant, cost of 42
plant, dental (De Hoit) 136
plant, savings to a manufacturing concern in (Seller) 42
Divers, falling sickness of (Bornstein) 41
Doping in aircraft works (Smith) 105
Drinking Fountains, common sense, science and (Dunlap) 42
how fountains are used, and results of tests of sloping stream types (Dieter) 178
tests of vertical-nozzle types (Dieter) 166
Drug addiction (Bloedorn) 32
addiction, problem of (Griffin) 49
addiction, regulation of, by state health department (Blair) 36
addiction, rules and regulations of N. Y. state department of narcotic drug control 103
addiction, statistics of narcotic relief station 36
addiction, treatment of (Greenfield) 103

PAGE

Drug addicts, clinic for 36
evil and drug law (Collins) 36
narcotic, control of (Herrick) 65
narcotics, traffic in 65
Dust, cement inhalation and its effect upon tuberculous lungs (Nagai) 146
dusty trades, preliminary report of committee on mortality from tuberculosis in 52
dusty trades, second preliminary report of committee on mortality from tuberculosis in 146
exhaust removal of, *see* Exhaust.
hazard in abrasive industry (Winslow, Greenburg, and Greenberg) 69
inhalation, experiments on (Mavrogordato) 10
metal, health risks from buffing, polishing, and grinding metals (Roach) 127
non-poisonous, health hazards of (Hayhurst) 173
protection against, respirator for 22
standards for measuring efficiency of exhaust systems in polishing shops (Winslow, Greenburg, and Angermyer) 52
wood, effect on health (Albaugh) 10
Dye, case of cyanosis due to poisoning by shoe dye (Stifel) 9
methemoglobinemia due to poisoning by shoe dye (Stifel) 9

Ear protection (Trible and Watkins) 11
Education, *see also* under Schools.
Education Act of 1918 (Dean) 159
agricultural 101
agricultural, future of (Hunt) 160
college, for industrial workers (Kolbe) 101
commercial firms co-operate in advancement of ... 86
continuation classes (Bellhouse) 159
continued 172
current publications 86, 160
general industrial school for cities of less than 25,000 population (Loomis) 86
industrial, national supremacy, and co-operation (Arps) 158
industrial, Theodore Roosevelt and (Thomas) 102
in industrial medicine (Geier) 86
investigation into cases of 100 boys who left school to go to work (Cohen) 103
labor's attitude toward (Sterling) 86
new education and the nation's business (Swiggert) . 101
part-time co-operative, launching on a large scale (Leavitt) 50
Pittsburgh co-operative plan of (Rynearson) 101
practical instruction in hygiene in medical schools (Chassevant) 85
program of American labor 100
Efficiency and industrial health, report of British health of munition workers committee on 84
early closing helps efficiency of workers (Manning) 132
industrial, fatigue and (Polakov) 176
Effort Syndrome, *see* Heart, irritable.
Eight-Hour Day, road to (Bauer) 121
Elbow splint, reversible and adjustable (Lasher) ... 40
Electric accidents affecting ear (Nager) 191
shock, resuscitation from 93
Electricity in factories, use of (Ram) 164
Elyria, report of Cleveland and Elyria cripple surveys (Stern) 31
Emphysema, lungs and breathing in wind-instrument players (Jagić and Lipiner) 104, 124
Employees' benefit and pension schemes 115
mutual benefit association, health service through (Hall) 183
Employer, duty of, to provide emergency treatment. 196
liability of, for occupational disease (Vitoux) 184
when not liable for medical services 195
Employment and accidents in group of steel mills (Chaney) 192
city hygiene in relation to (Howarth) 166
installing employment methods (Sawyer) 16

PAGE

EMPLOYMENT management functions, classification of (Kelly) ... 80
managers, convention of ... 80
principles of employing labor (Fish) ... 28, 80
service, nation-state co-operation in ... 121
taking guesswork out of (Fischer) ... 158
U. S. employment service (Smyth) ... 121
ENAMELS, standards for use of ... 131
ENERGY expenditure and food requirements of women workers (Rosenheim) ... 150
ENGINEERING for business students and business training for engineers ... 63
ENGLISH, *see* British.
EPILEPSY, elimination of, from the navy (Bisch) ... 7
ETHYLMERCAPTAN, poisoning through inhalation of (Pichler) ... 9
EXHAUST piping system, industrial, design of ... 14, 27
removal of planing-mill wastes ... 58
systems, standards for measuring efficiency of, in polishing shops (Winslow, Greenburg, and Angermyer) ... 52
EXPLOSIONS, grain dust, and fires (Price) ... 131
in coal mines (Haldane) ... 175
in coal mines (Harker) ... 175
of chemicals, common law liability for (Sherlock) ... 168
of chemicals, workmen's compensation acts and (Sherlock) ... 168
EXPLOSIVES, poisoning by (Reach) ... 105
production of, in U. S. during 1917 (Fay) ... 19
EXTREMITIES, occupational therapy in treatment of disabilities of (Brackett) ... 31
EYEBALL, foreign bodies in (McReynolds) ... 191
EYES, accidents to, cases of evaluation of incapacity for work after (Demault) ... 107
burns of, by lime ... 191
harvesters' keratitis (Chenet) ... 191
protection of, from injurious radiations, manufacture of glasses for (Coblentz) ... 107
protection of, goggles in shipyards (Haskins) ... 55
protection of head and (Newell) ... 23
protection of, sight saving schools (Harman) ... 122
protective glasses, ultra-violet and visible transmission of (Gibson and McNicholas) ... 191
wounds of (Lagrange) ... 191

FACE, early suturing of wounds of (Kazanjian) ... 24
FACTORY, *see also* under Plant and Workshop.
FACTORY and workshops in Tennessee, safety standards in ... 55
construction of dye works ... 26
construction of, plan to advise prospective manufacturers in regard to ... 95
heating, *see* Heating, factory.
hygiene in reconstruction of (Bargeron) ... 134
lighting, *see* Lighting.
medical service, reconstruction of ... 6
wastes, *see* Wastes.
welfare supervision of ... 137
FAINTING, observations upon attacks of, due to inhibitory cardiac impulses (Cotton and Lewis) ... 20
FATALITIES, *see* Mortality.
FATIGUE and industrial efficiency (Polakov) ... 176
changes in the blood and urine from (Hastings) ... 132
disease as exemplified in functional disorders of stomach and thyroid gland (Rogers) ... 41
effect of, on heart and cardio-skeletal quotient (Mendenhall) ... 24
elimination (Gilbreth) ... 109
industrial, effect of rhythm upon ... 133
in irritable heart and other conditions (King) ... 40
in tin-plate manufacture ... 149
muscular tonus in relation to (Ryan, Jordan, and Yates) ... 109
the one-break day ... 12
problem of (Fuld) ... 164
reducing hours of work ... 93
FEDERAL board for vocational education, publications of ... 62

PAGE

FEDERAL standards for employment of women ... 25
FEEBLEMINDED, *see also* under Moron.
FEEBLEMINDED, achievement of mental defectives in standardized educational tests (Wallin) ... 104
after-school care of (Steinbach) ... 51
bibliography of feeblemindedness in its social aspects (Crafts) ... 66
high-grade, and the insane, point scale examinations on (Curtis) ... 182
FEET, weak, treatment of, on military lines, among civilians (Donnelly) ... 24
FILTER, rain-water, proper construction of (Puckett) ... 27
FINGERS, acute septic infections of (Bamberger) ... 40
and hand wounds, treatment of, by traction splints (Walther) ... 176
stiff, methods of treatment by metal and plaster splints (Verrall) ... 71
FIRE doors and shutters, covering of ... 27
from oil and gas, extinguishing and preventing ... 40
grain dust explosions and (Price) ... 131
hazards, chemical (Milne) ... 131
prevention of, procedures and devices ... 130
private protection against ... 58
protection from, by automatic sprinklers ... 27
protection service, report of committee on ... 178
safety from, in retail stores and schools ... 130
water departments and private fire lines (Gwinn) ... 131
FLATFOOT and leg muscle strain, relation of, to industry (Baker) ... 40
static, prevention and treatment of, with observations on statics and mechanics of normal foot and flatfoot (Petersen) ... 24
FOOD and nutrition, studies of ... 133
antiscorbutic property of raw and dried tomatoes (Givens and McClugage) ... 12
consumption of, in training camps of U. S. Army (Murlin) ... 133
green, vitamines in (Osborne and Mendel) ... 12
influence of high temperatures and dilute alkalies on antineuritic properties of (Daniels and McClurg) ... 12
requirements and energy expenditure of women workers (Rosenheim) ... 150
requirements of normal working-class family (Thompson) ... 150
vegetable, *see* Vegetables.
FRACTURES of long bones, causes of delayed and non-union in (Estes) ... 194
FURUNCULOSIS, effect of metallic tin and tin oxide in (Frouin and Grégoire) ... 54

GARAGE, hazards in (Rausch) ... 39
GAS, apparatus for administration of gases and vapors to animals (Marshall and Kolls) ... 37
automobile exhaust, vitiation of garage air by (Burrell and Gauger) ... 88
effect of, on respiratory tract (Berghoff) ... 189
illuminating, heart findings in poisoning by (Zondek) ... 126
industrial, protection against, by gas masks (Fieldner, Teague, and Yoe) ... 124
lethal war, poisoning with, physiology and experimental treatment (Underhill) ... 189
masks, *see* Gas Masks.
warfare, aftermath of (Catton) ... 87
workers, influenza among (Shufflebotham) ... 89
GAS MASKS absorbents (Lamb, Wilson, and Chaney) ... 69
and absorbents, method of testing (Fieldner, Oberfell, Teague, and Lawrence) ... 124
army masks unsuited for industries ... 108
protection afforded by, against industrial gases (Fieldner, Teague, and Yoe) ... 124
respirators and oxygen breathing apparatus, industrial use and limitations of (Fieldner) ... 39
GERMAN Republic, constitution of, and the medical profession (Mugdan) ... 171
GERMANY, food conditions in, when peace was signed (Addams and Hamilton) ... 123
GRAIN dust explosions and fires (Price) ... 131

PAGE

GREAT BRITAIN, report Inspector Factories and Workshops, 1915 47
report Inspector Factories and Workshops, 1916 . . . 83
report Inspector Factories and Workshops, 1917 . . . 100
report Inspector Factories and Workshops, 1918 . . . 155

HAND and finger wounds, treatment of, by traction splints (Walther) 176
impairment of function of (Metcalf) 24
reconstructive surgery of (Wilson and Hyman) 193
HANDICAPPED, *see also* under Disabled.
HANDICAPPED, opportunities for, in brush industry (Paull) 62
opportunities for, in rubber industry (Morris and Paull) 118
rehabilitation of, *see* Rehabilitation.
HARVESTERS' keratitis (Chenet) 191
HAZARDS, industrial, *see* Industrial hazards and also under names of specific hazards.
HEAD and eye protection (Newell) 23
injuries, late effects of, on ability to work (Fossataro) 91
HEALTH and occupation (Haldane) 49
and output of workers in silk manufacturing in relation to hours of work 92
and output of workers in wool manufacturing in relation to hours of work 43
conditions in southern Europe (Dublin) 35
guide posts on road to (Halliday) 49
hazards in industries of Niagara Falls (Holmes) . . . 188
hazards of the chemical industry 181
housing and (McBride) 137
housing and recreation, effect of war activities on (White) 114
industrial, and efficiency, report of British health of munition workers committee on 84
industrial, how we keep our men well (Elliott) 28
industrial, keeping workers fit (Richter) 136
industrial, keeping workers well 113, 166
industrial, keeping workers well shod 115
industrial, Montgomery Ward builds employees' health (King) 28
industrial, protection of, at Western Electric Company (Robinson) 44
industrial, successful health supervision by a manufacturing company (Weber) 14
insurance, *see* Insurance, health.
new standards of, for the American family (Tufts) . 142
of Holy Land (Rubinaw) 170
of Manchester (Alden) 153
of women, women physicians and 165
of workers in ceramic and porcelain industry 142
organization, safety and sanitation, plan for, in shops 17, 23
problem from new angle (Williams) 169
program of American Pulley Company (Sawyer) 44
problems of industrial workers (Lapp) 6
public, and the candy industry 114
public, democracy and administration of (Hastings) 19
public, health insurance and medical profession (Warren) 61
public, in the industrial age (Geddes) 99
public, relation of railroads to 85, 120
public, Royal Institute of, London conference 100
public, University of (Vincent) 19
reconstruction program (Commons) 139
service through employees' mutual benefit association (Hall) 183
state survey, N. Y. plan for 96
supervision in industry, cost of (Alexander) 34
supervision of working children (Barth) 57
why overhauling human machine is necessary (Hubbard) 170
HEART, disordered action of, report on cases in British army 123
findings in illuminating gas poisoning (Zondek) 126
intracardiac injections, technique of (Volkmann) . . . 176

PAGE

HEART, irritable, bicarbonate concentration of blood plasma in (Wilson, Levine, and Edgar) 104
irritable, effect of certain sensory stimulations on respiratory and heart rate in (Meakins and Wilson) 21
irritable, effects of epinephrin on basal metabolism in soldiers with, in hyperthyroidism and in normal men (Tompkins, Sturgis, and Wearn) 124
irritable, effect of epinephrin on electrocardiogram of (Clough) 124
irritable, effects of injection of epinephrin in soldiers with (Wearn and Sturgis) 123
irritable, orthodiagraphic observations on size of (Meakins and Gunson) 21
irritable, possibilities of physical development in cases of effort syndrome by graded exercises (Smith) 124
irritable, vital capacity of lungs in (Levine and Wilson) 124
HEAT, effect of, on blood count in animals (Murphy and Sturm) 12
source of lymphocytosis from (Nakahara) 12
HEATING and ventilation of workshops 58
and ventilating problems (Nygren) 135
and ventilation, requirements and standards for (Nygren and Hering) 13
factory (King) 13, 14, 27
HEATSTROKE, hyperpyrexial (Hearne) 108
HELIOTHERAPY, technique of (Aimes) 132
HOOKWORM disease, effects of, on mental development of schoolchildren (Waite and Neilson) 190
in miners, report of California board of health on . . 22
HOSPITAL co-operates with employers to secure treatment of injured employees 32
for workman, prospectus of 153
industrial, serves community 58
service in rural communities (Meyer) 19, 20, 35
HOURS of labor and wages in the coal mining industry . 181
of labor and wages in the boot and shoe industry . . . 181
of labor and wages in the iron and steel industry . . 181
of labor and wages in the slaughtering and meatpacking industry 182
of labor and wages, union scale of 188
of work (Graves) 164
of work and emergency orders (Bellhouse) 115
of work as related to output and health of workers in silk manufacturing 92
of work as related to output and health of workers in wool manufacturing 43
of work, reduction of 93
HOUSEWIFE, neurosis of (Myerson) 172
HOUSING and health (McBride) 137
and transportation problems in relation to labor placement (Ihlder) 14
and welfare work of British ministry of munitions 28
at Cradock 28
bad housing and ill health (Ford) 136
better housing in Iowa 59
better housing, what it asks of the physician (May) . 43
Boston's code of 14
Canada's post-war progress in 137
cost and value of good housing to our industrial life (Allen) 153
development, a post-war problem in Canada (Adams) 137
developments of U. S. Housing Corporation, lessons from (Olmstead) 79
development of U. S. naval ordnance 28
for workingmen, problem of 43
good housing as reducer of labor turnover (Fisher) . . 153
government, at home and abroad (Shannon) 114
government model villages (Childs) 28
government, part the engineer played in (Alvord) . 15
government, what will become of it? (Childs) 14
health and recreation, effect of war activities on (White) 114
industrial 14
industrial, situation abroad 153
Italian state aid for workmen's dwellings 181

PAGE

HOUSING, New London project (Tribus) 96
of soldiers in spruce production camps 14
Ontario's policy of 96
quantity house production of Emergency Fleet Corporation 27
report of Canadian committee on 59
Seattle home-buildng plan (Bush) 114
successful schemes for 96
U. S. Housing Corporation, report of 137
war program and its future (Hitchcock) 79
what about the government program of ? (Knowles) 14
workers, an unfinished job (Cove) 14
work in Bridgeport (Ham) 136
workmen's lodgings in Lille (Calmette) 96
HYDROCYANIC acid, detoxification of, by sodium thiosulphate (Teichmann and Nagel) 125
acid, identification and quantitative determination of small amounts of (Lavialle and Varenne) 125
HYGIENE and physical training, bibliography of 160
and physical training, bibliography of (Affleck) 64
and safety, training courses in, in the building trades 129
in city of Staaken, survey of (Nitsch) 167
industrial, what federal government is doing for (Newman) 120
interallied congress of (Friedel) 142
mental, *see* Mental hygiene.
of future, plans for (Schmidt) 85
of transportation workers (Merkel) 186
spreading knowledge of, among the public (Springer) 169
social, *see* Social hygiene.
HYPERTHYROIDISM, effects of epinephrin on basal metabolism in soldiers with irritable heart, in hyperthyroidism and in normal men (Tompkins, Sturgis, and Wearn) 124
HYSTERO-TRAUMATISM, medico-legal problem of (Pitres and Verger) 60

IDAHO industrial accident board, report of, 1918 61
ILLUMINATION, *see* Lighting.
IMMIGRATION, past and future (Smith) 122
INDELIBLE pencil, injury due to (Erdheim) 132
INDIANA industrial board, report of, 1918 48
labor laws for women in 56
INDUSTRIAL accidents, *see* Accidents.
and scientific research, national importance of (Hale, Root, Pritchett, Vail, Swasey, Mellon, Eastman, Douglas, MacColl, and Howe) 170
communities, recreation in (Wyman) 183
crisis, physician and surgeon in (Geier) 156
diseases of war workers (Hamilton) 67
diseases, uses of motion pictures in (Sprague) 188
diseases, workmen's compensation and 185
education, *see* Education, industrial.
efficiency, neurology, psychiatry and general medicine as scientific aids to (Ball) 84
era, physician and surgeon in (Geier) 188
establishments, sickness records for 170
gases, protection against by gas masks (Fieldner, Teague, and Yoe) 124
hazards (Meeker) 120
health, *see* Health, industrial.
hospital, *see* Hospital, industrial.
hygiene (Harris) 33
hygiene and medicine, progress of, in 1918 (Patterson) 6
hygiene, application of laws on, to small establishments (Bargeron) 138
hygiene, Congress should support adequately 34
hygiene, co-ordinating federal, state, and local health agencies in promotion of (Schereschewsky) 156
hygiene, discussion of problems of, at meeting of American Public Health Association 33
hygiene, investigations in (Weichardt) 149
hygiene, organization of division of (Selby) 85
hygiene, resolutions of social hygiene congress on .. 121
hygiene studies (Weichardt and Apitzsch) 104
losses (Newman) 158

PAGE

INDUSTRIAL medical service, *see* Medical service.
medicine, education in (Geier) 86
medicine, modern (Selby) 35
medicine, studies of medical and surgical care of industrial workers (Selby) 72
nursing, *see* Nursing, industrial.
physician and human relations (Quimby) 65
physician and human relations department (Geier) . 65
physicians and surgeons, suggestions to (Selby) 49
physiology, new science of (Lee) 49
problems, treatment of, by constructive methods .. 19
readjustment in U. S., National Industrial Conference Board report on 51
recreation, *see* Recreation.
safety, *see* Safety.
surveys for physical readjustments (Segur) 15
training (Miles) 122
training, increased production through 160
training, recent developments in (Rosenstein) 101
wastes, *see* Wastes.
welfare work 157
welfare work, effects of 60
INDUSTRY and labor, departments of, reports, *see* under individual states.
and medicine (Hubbard) 6
four partners in (Rockefeller) 158
humanization of (Fisher) 35
INFECTION, epidemiology of sputum-borne diseases and relation to health of national forces (Vedder) ... 10
transmission of, by water supplies and drinking devices (Stovall and King) 95
unprotected routes of (Soper) 88
INFLUENZA among poison gas workers (Shufflebotham) 89
among workers, epidemiology of (Ball) 89
among workers in fumes, epidemiology of (Gregor) .. 89
aspect of 1918 epidemic in American cities (Pearl) .. 127
possible recurrence of 127
recent epidemic with special consideration of its course among working people (Tedeschi) 38
sanitary service rids construction camp of (Kauffman) 70
status of prophylactic vaccination against (McCoy) . 190
INJURIES, joint, nerve, and other injuries in war surgery (Jones) 193
self-inflicted, experiences with toxicological substances employed by soldiers to produce (Pick and Wasicky) 124
INSANITY, relative frequency of, in city and country (Swift) 66
INSPECTORS of industrial hygiene, creation of (Doizy) . 158
INSURANCE, compensation companies, relation of hospital to 58
group (Kimball) 29
group, for the industrial worker (Rice) 44
health (Ketcham) 17
health, American bill for, better than British act (Macarthur) 139
health and old age, in Ohio (Lapp) 45
health, and old-age pensions 117
health, compulsory (Tucker) 29
health, compulsory health insurance legislation (Stone) 138
health, compulsory sickness insurance propaganda .. 185
health, in Pennsylvania 29
health, in relation to history of two countries where it has found most favor (Downing) 45
health, lessons of British act (Bondfield) 139
health, medical administration of (Hutchinson) 117
health, medical profession, and the public health (Warren) 61
health, N. Y. bill for 139
health, opinion in U. S. on 138
health, political expediency and social justice calls for action on (Davenport) 139
health, report of Pennsylvania commission on 196
health, year's developments toward legislation in (De Leon) 17
social, in U. S., next step in (Lindsey) 45

PAGE

INSURANCE, state, against sickness, economic and political bases of (Verney) 117
state, an adventure in (Pillsbury) 185
INTELLIGENCE, statistical study of, as factor in vocational progress (Cowdery) 182
tests, *see* Mental tests.
INTERNATIONAL conference on child welfare, standards adopted 111
labor conference, business transacted 171
labor conference, conventions and recommendations 171
labor conference, data and recommendations for consideration of 157
IRON and steel industries, accidents in 23
and steel industries, safety movement in 23
and steel industries, wages and hours of labor in 181
cast, rupture of, in contact with mixed acid (Cummings) 22

JAPANESE women in industry 94
JAPANS, standards for use of 131
JAUNDICE, picric jaûndice and icterus (Malmejac and Lioust) 21
JOINT, nerve, and other injuries in war surgery (Jones) 193
splint for stiff metacarpo-phalangeal joints (Lewis) 24

KERATITIS, harvesters' (Chenet) 191

LABOR administration in shipbuilding industry during war time (Douglas and Wolfe) 51, 63
American, educational program of 100
attitude of, toward education (Sterling) 86
California's labor camps (Kryst) 167
child, *see* Child labor.
conditions in Connecticut, report of bureau of labor statistics on 36
department of, seventh annual report of secretary of 187
departments of, reports, *see* individual states.
international standards of, and possible enforcement in U. S. (Wickersham) 157
labor-saving appliances (Taylor) 165
law, general, of New York 121
laws of California, 1919 187
laws of Connecticut 60
legislation, international, and how it can be enforced in U. S. (Elkus) 157
legislation of 1918 116
legislation of 1919 183
problems and legislation (Andrews) 121
representation of, capital gets new director (Wildman) 171
situation in France (Swartz) 100
turnover, good housing as reducer of (Fisher) 153
LACQUERS, standards for use of 131
LARYNX, steel in, report of case (Allport and Wilson) .. 39
LAUNDRIES, standards for employment of women in, in California 94
validity of ordinance regulating 138
LAWS, labor, *see* Labor laws.
LEAD, determination of minute amounts of, in urine, feces, and tissue (Denis and Minot) 145
permeability of intact skin to (Süssman) 38
poisoning among painters (Herman) 126
poisoning, chronic saturnism, ulcus venticuli and vegetative nervous system (Schiff) 144
poisoning, de-ionization in treatment of (Gibson) . 88
poisoning, industrial, early diagnosis of, by blood tests (Schnitter) 126
poisoning in waterfowl (Wetmore) 145
poisoning, precautionary measures to prevent 190
turpentine and benzine poisoning, frequency of, in 402 painters (Harris) 52
LEATHER industries, industrial surveys of (Boate) ... 62
LEGISLATION, *see also* under Laws.
LEGISLATION, compulsory health insurance (Stone) .. 138
health, Mass. requirements for care of injured or ill employees 184

PAGE

LEGISLATION, health, rules and regulations in the painting business 184
LEISURE, organized, a factor in conservation (Aronovici) 16
LIABILITY, common law, in explosion of chemicals (Sherlock) 168
employer's, for occupational disease (Vitoux) 184
LIBRARIES in safety work 107
LICE, diseases carried by, protective measures available against (Bacot) 160
LIGHTING and industrial efficiency 95
improving shop efficiency by (Chantler) 135
industrial (Clewell) 27, 95
industrial codes of (Stickney) 42, 57
industrial, Wisconsin code of 27
in factories, how to regulate window light (Clewell) 135
in factories, mills, and other workplaces, code for ... 26
in factories, problems of 112
in factories, what it pays to know about (Clewell) ... 112
in workplaces, means of insuring adequate illumination (Rausch) 112
LIME, burns of the eye by 191
LOCOMOTIVE, crane operators, warning to (Rausch) .. 56
LUBRICANTS, injurious effects of oils and vaselines on the skin (Bettmann) 129
investigation into dermic effect and infective character of (Deeds) 22
skin diseases produced by 174
LUNGS, vital capacity of, in irritable heart (Levine and Wilson) 124
LYMPHOCYTOSIS from heat, source of (Nakahara) ... 12

MACHINES, safeguarding of 90
MALARIA control at nitrate plant (Stromquist) 70
problem of, in the South (Carter) 127
MANAGERS, school for (Schoen) 172
MALINGERING, eye, trial frame for (Allport and Smith) 195
new malingeroscope (Alger) 97
MALNUTRITION in schoolchildren, problem of (Averill) 71
MANITOBA, wages for women in 60
MANUAL arts in terms of present needs (Griffith) 159
training, argument for larger projects in, suggestive of community activity (Foulkes and Diamond) ... 159
MANUFACTURING plant, *see* Plant.
MATERNITY and child welfare, relation of alcohol and alcoholism to (Scharlier) 177
and infancy, essentials for public care of (Barton) . 152
protection of expectant mothers at work during war (Bargeron) 133
MEAT-PACKING and slaughtering industry, wages and hours of labor in 182
MEDICAL examiners, a guide for, of occupation hazards and diagnostic signs 119
inspection of young workers 142
profession, health insurance and the public health (Warren) 61
service, industrial 113
service pays big dividends (Smith) 27
service, studies of medical and surgical care of industrial workers (Selby) 72
supervision of students (Bardeen) 141
University of Iowa as a state center (Chamberlain) 141
MEDICINE, industrial, *see* INDUSTRIAL medicine.
MENTAL and nervous diseases in the war (Meagher) . 144
age scale for adults (Lincoln and Cowdery) 168
defect in southern state (Anderson) 172
defectives, recommendations for care of, in Manitoba 122
defectives, *see* Feebleminded and Insane.
development of schoolchildren, effects of hookworm disease on (Waite and Neilson) 190
disease in families (Myerson) 87
disorder considered as a psychological reaction (Harrington) 87
efficiency, need of (Keniston) 60

PAGE

MENTAL examinations, routine method of, for naval recruits (Bisch) 44
health, national problems of (Delgado)..... 49
health, success and failure as conditions of (Burnham)..... 188
hygiene and immigration (Pagé)..... 122
tests (Franz)..... 96
tests, an absolute intelligence scale (Arthur and Woodrow)..... 97
tests, achievement of mental defectives in standardized educational tests (Wallin)..... 104
tests, army intelligence tests at Purdue University (Roberts and Brandenburg)..... 182
tests, age scale methods of measuring intelligence (Moore)..... 96
tests, classified scale for measuring intelligence (Washburne)..... 167
tests, cross-out tests with suggestions as to group scale of emotions (Pressey and Pressey)..... 97
tests, diagnostic fallibility of intelligence ratios (Mateer)..... 80
tests, extension of selective tests to industry (Ruml). 15
tests, general ability, cleverness and purpose (Garnett)..... 97
tests, group intelligence test (Myers and Myers) .. 154
tests, group tests of general intelligence (Lowell) .. 168
tests in industry (Chapman)..... 59
tests, intelligence vs. efficiency tests (Ide)..... 80
tests, meaning of Binet score (Humpstone)..... 183
tests, non-language group intelligence test (Pintner)..... 154
tests, of intelligence: reliability, significance, susceptibility to special training and adaptation to nature of task (Thorndike)..... 80
tests for prospective telegraphers (Thurstone)..... 97
test, response of group to Stanford revision of Binet-Simon tests (Chase and Carpenter)..... 154
tests, standardized group examination of intelligence independent of language (Thorndike)..... 59
tests, standardized test for office clerks (Thurstone).. 154
tests, value of intelligence quotient for individual diagnosis (Wallin)..... 80
MERCURY, bichlorid poisoning, acute, treatment of (Rosenbloom)..... 21
chlorid poisoning, metabolism in (Barlocco)..... 189
METABOLISM, effects of epinephrin on, in soldiers with irritable heart, in hyperthyroidism and in normal men (Tompkins, Sturgis, and Wearn)..... 124
mineral, dependence of protein requirement on (Rose and Berg) 150
of female munitions workers (Greenwood, Hodson, and Tebb)..... 109, 150
METAL dust, *see* Dust.
METHANE accumulations from interrupted ventilation (Smith and Hamon)..... 21
METHEMOGLOBINEMIA due to poisoning by shoe dye (Stifel)..... 9
METHYL ALCOHOL, detoxication of (Pohl)..... 9
MICHIGAN Anti-Tuberculosis Association, activities of, in 1919 (Van der Slice)..... 106
MILITARY service, physical rejection for (Beard)..... 64
MINER, *see also* under Mining.
MINER, coal, bulbar syndrome of (Benoit)..... 123
coal, education of, in subjects pertaining to mining (Callen)..... 103
coal, employer's responsibility for impairment of health of..... 138
coal, health of, in Ohio (Hayhurst)..... 19, 65, 103
hookworm in, report of California board of health on..... 22
safety and health almanac for (Williams)..... 90
MINES, bureau of, publications of 103
coal (bituminous), dangerous and safe practices in (Steidle)..... 193
coal (bituminous), fatalities in Pennsylvania, 1914–1918 198
explosions in, *see* Explosions.
metal, accidents in U. S. during 1917 (Fay)..... 90

PAGE

MINIMUM WAGE commissions, current facts (Dewson)..... 188
for women in British Columbia..... 94
MINING, *see also* under Miner.
MINING, coal, industry, wages and hours of labor in.. 181
model tropical mining village (Masters)..... 113
sanitation in East Indian mining camp (Jenks)..... 14
MISSOURI state board of health, report of, 1917–18. ... 121
workmen's compensation legislation in..... 117
MONTANA department of labor and industry, report of, 1917–18..... 48
MORBIDITY, industrial, statistics of..... 139
MORON, industrial efficiency of (Ordahl)..... 66
the new moron (Jones)..... 144
MORTALITY, air control and reduction of death rate after operations (Huntington)..... 165
coal mine (bituminous) fatalities in Pennsylvania, 1914–18..... 198
coal mine fatalities in U. S. for January and March, 1919 (Fay)..... 98
infant, income and (Lathrop)..... 140
interpretation of death rate by climographs (Huntington)..... 34
MOSQUITO eradication in southeastern Pennsylvania (Royer)..... 113
MUNITIONS factories employing women, wastage of labor in..... 151
industrial diseases resulting from manufacture of (Hamilton) 67
intoxications in France (Perkins)..... 161
output in relation to hours of work by women in shell-making..... 177
plants, sanitation for..... 57
workers, British women as..... 26
workers, female, prevalence and cause of tuberculosis among..... 147
workers, health and efficiency of, report of British committee on..... 84
MUSCULAR tonus in relation to fatigue (Ryan, Jordan, and Yates)..... 109
MUSIC in industrial recreational enterprises..... 168
MUSTARD GAS (Marshall)..... 189
poisoning, blood and bone marrow in (Krumbhaar and Krumbhaar)..... 189

NARCOTICS, *see* Drug.
NASAL septum, occupational lesions of (Ranelletti) .. 191
NATIONAL Industrial Conference Board report on hours of work as related to output and health of workers in silk manufacturing..... 92
Industrial Conference Board report on hours of work as related to output and health of workers in wool manufacturing..... 43
Industrial Conference Board report on industrial readjustment in U. S..... 51
Industrial Conference Board report on rest periods for workers..... 56
Safety Council, cancer poster for industrial use.... 123
NAVY, disciplinary problems of (Jacoby)..... 171
NEBRASKA departments of labor and compensation, report of, 1917–18..... 60
NECROSIS of jaws following antiluetic treatment (Schulze)..... 125
NEGROES move north (Haynes) 14
NEIGHBORHOOD organization vs. tuberculosis (Nelson) 190
NERVE, joint, and other injuries in war surgery (Jones) 193
peripheral, injuries, 500 cases of (Frazier and Silbert)..... 194
peripheral, injuries, surgical problems in reconstruction of (Frazier)..... 194
NERVOUS and mental diseases in the war (Meagher) . 144
NEURASTHENIA, a growing disease in engineering work (Sherlock)..... 41
NEUROSIS of housewife (Myerson)..... 172
NEW JERSEY, control of venereal disease in..... 106
department of labor, report of, 1918 116
NEW YORK City, tuberculosis in, in 1918 (Harris)..... 173
compensation bureau, review of report of 28

PAGE

New York general labor law 121
Navy Yard, accident reduction in 107
settlements under workmen's compensation act in . 117
Niagara Falls, employment of women in 25
Night Work in bakeries, reasons for abolishing (Iffland) 158
in bakeries in England 188
medical argument against, especially for women (Hayhurst) 57
Nitro-Compounds, aromatic, toxic action of (Ilzhofer) 8
North Carolina, state board of health report on excreta disposal 112
North Dakota, workmen's compensation legislation in 117
Nurse, industrial, and National Organization for Public Health Nursing 180
industrial, heart-talk with (Meyers) 181
industrial, responsibilities and opportunities of (Wright) 180
public health, rôle of, in venereal disease control 113
trained, discussion of, in industry 180
Visiting Nurse Association 180
Nursing, eight-hour day in a small training school (Wetmore and Goeppinger) 121
industrial (Waters) 180
industrial, activities 180
industrial, welfare aspect of (McGee) 136
National Organization for Public Health Nursing and the industrial nurse 180
public health, in California (Hedenberg) 180
public health, in Westchester County (La Forge) ... 180
public health, pamphlets on 180
public health, U. S. P. H. S. urges training of women for 79
work in telephone companies (Toering) 181
Nutrition, efficiency of oat protein in (Sherman, Winters, and Phillips) 150
food and, studies of 133
nutritional skeletal damage, roentgen findings in (Staunig) 133

Occupation and health (Haldane) 49
hazards and diagnostic signs, a guide for medical examiners 119
Occupational affections of skin, *see* Skin.
disease, compensation for, *see* Compensation.
disease, employer's liability for (Vitoux) 184
disease in Connecticut, report of bureau of labor statistics on 36
diseases in Pennsylvania (Hamilton) 103
lesions of nasal septum (Ranelletti) 191
Odors and stenches, investigation of (Allison and Katz) 71
Ohio, venereal disease in 89
Oils, *see* Lubricants.
Output and health of workers in silk manufacturing in relation to hours of work 92
and health of workers in wool manufacturing in relation to hours of work 43
Overwork, a cause of accidents 107
Oxyacetylene welding, *see* Welding, oxyacetylene.
Oxygen, apparatus for automatic estimation of small amounts of, in combustible gas mixtures or of combustible gases in air (Greenwood and Zealley) 37
Ozone as disinfectant in water purification (Ellms) ... 152

Painting business, health rules and regulations in 184
Paper box industry, conditions of women employed in 158
Pennsylvania, coal mine (bituminous) fatalities in, 1914–18 198
health insurance in 29
Pensions, old-age, health insurance and 117
schemes, employees' benefit and 115
Periodicals, list of periodicals covered by Abstract of the Literature of Industrial Hygiene 1

PAGE

Personality, study of, in estimating adaptability (Amsden) 59
Petrolatum and dichloramin-T dressing for burns (Sollmann) 24
Phosphorus and chloroform poisoning, protective action of carbohydrate diet in (Simonds) 21
necrosis of jaws, cases of (Pinel) 52
Phthisis, *see* Tuberculosis.
Physical education, America's new service (Candler) 86
education and the national situation (Browne) 64
education methods, effect war should have on (Arnold) 64
examination of department of health employees (Glasgow) 98
exercises in cardiovascular service (Smith) 8
training and hygiene, bibliography of 160
training and hygiene, bibliography of (Affleck) 64
Physiology, industrial, new science of (Lee) 49
of work day 92
Picric acid in treatment of burns (Thorpe) 108
acid, jaundice and icterus from (Malmejac and Lioust) 21
Pitch disease, prophylaxis of (Herman) 163
Planing-Mill wastes, exhaust removal of 58
Plant, *see also* under Factory.
Plant, planning for manufacturing plant (Noyes) 134
planning the industrial plant (Wharton) 112
Plumbing fixtures, essential sanitary features of 166
industry, industrial sanitation offers opportunity to. 27
installation of, in Chicago factory 112
specifications, important feature in (Cosgrove) 179
Plumbism, *see* Lead poisoning.
Pneumonia and its prevention 88
Podiatry, a vocational opportunity for the disabled .. 139
Polishing shops, standards for measuring efficiency of exhaust systems in (Winslow, Greenburg, and Angermyer) 52
Porcelain and ceramic industry, health of workers in. 142
Power drives for sewing machines (Rausch) 107
Prophylaxis for venereal disease 70
Psychiatric clinic in Westchester (Lane) 165
Psychology committee of National Research Council, report of (Yerkes) 59
field of clinical psychologist and kind of training needed by psychological examiner (Wallin) 60
of vocation (De Sanctis) 60
practical applications of (Hall) 50
war, and education (Strong) 80
Psychoneurotic temperament, reaction of, to military service (Ballard) 59
Psychopathology, general (Southard) 172
Psycho-physiological factor in industrial work (Ioteyko) 50
Psychoses, *see also* under Insanity, Neurasthenia, Neurosis and Psychoneurotic.
Psychoses, capacity for military service of psychically abnormal (Steizner) 144
Pulleys, belting and shafting, protection of 39
Pulse rate standard for recruits (Addis) 8

Quarantine, right of, in venereal disease 106
Quarry accidents in U. S. during 1917 (Fay) 90
Quebec industrial establishments (amendment) act concerning child labor 60

Railroads, public service under government operation of (Thelen) 175
relation of, to public health 85, 120
safety campaign on 107
Reconstruction, industrial arts in (Bawden) 51
in Great Britain (Adams) 58
legislatures, work of (Rex and Childs) 80
orthopedic, of German wounded 24
Recreation, community, from point of view of physical education (Alden) 183
for adults 168
housing and health, effect of war activities on (White) 114
in industrial communities (Wyman) 183

PAGE

RECREATION, music in industrial recreational enterprises 168
theatres as a means of, for workers (Mackay)..... 168
RECRUITS, *see also* under Soldiers.
RECRUITS, cardiovascular examinations of (Cass).... 7
cardiovascular examinations of (Fahr)..... 7
effect of cardiac distress on work of (Hein)..... 7
RED CROSS, with the Red Cross in Italy (Stone) 53
REHABILITATION, *see also* under Vocational Education
REHABILITATION and vocational training of war cripples (Drexel)..... 18
employment opportunities for rehabilitated men in Pennsylvania (Mackey)..... 46
helping the wounded soldier to " come back " (Baldwin)..... 81
mental, plan for psychic rehabilitation of psychopathic and neuropsychopathic soldiers (Lazell)... 118
of disabled civilians, Bankhead-Smith Bill for promoting..... 82
of disabled, index-catalogue of library on (McMurtrie)..... 62
of disabled soldiers and sailors or victims of industry (Winslow)..... 62
of industrial cripples in Massachusetts (Robertson) . 46
of the disabled (Billings)..... 81
of workers (Hijmans)..... 30
problems (Price)..... 46
re-educating the disabled man (Faries)..... 82
through systematic exercise (Gugel)..... 81
training disabled men for self-support (McMurtrie) . 46
training for disabled soldiers and sailors (Levitas)... 62
REPORTS of state boards and departments, *see* under individual states.
RESEARCH, scientific, American Federation of Labor resolutions on..... 100, 143
RESPIRATION, artificial, contribution to technique of (Stewart and Rogoff)..... 93
RESPIRATORS, ammonia, new absorbent for (Perrott, Yablick, and Fieldner)..... 124
for protection against dust..... 22
REST periods for workers..... 56
RHYTHM, effect of, upon industrial fatigue..... 133
ROOF, construction of, for factories with excessive moisture (Hoxie)..... 13
ROYAL Institute of Public Health, report of London conference of..... 100

SAFETY, *see also* under Accidents.
SAFETY and health almanac for miners (Williams)... 90
and hygiene, training courses in, in building trades 129
British Industrial Safety First Association..... 23
campaign on railroads..... 107
congress, national, meeting of 163
congress, New York industrial 39, 55, 143
defense against dangerous articles (Dunn)..... 148
devices, group of..... 23
education in schools..... 130
engineering reduces construction cost..... 164
" engineering revision " as seen by safety committees (Chaney)..... 23
from fires in retail stores and schools..... 130
from foreman's point of view (Clark)..... 107
general measures for..... 55
instruction in schools (Payne)..... 90, 130, 193
instructions for use of pulverized coal..... 40
machinery lay-outs (Spence)..... 39
movement in iron and steel industries..... 23
sanitation and health organization, plan for, in shops..... 17, 23
securing attendance at railroad safety meetings (Dow)..... 130
standards for use of lacquers, shellacs, enamels, and japans..... 131
standards in Tennessee workshops and factories... 55
starting new men right..... 23
teaching of, to apprentices (Tarbell and Metz)..... 90
training the foreman in (Calder)..... 107
two-hand tripping device for punch press (Rausch) . 39
work, libraries in..... 107

PAGE

SALOON, substitutes for (Calkins)..... 115
SANITARY engineering, water supply and..... 178
equipment for industrial buildings (Hubbard)..... 95
equipment standards, industrial..... 13, 26
survey, N. Y. industrial hygiene division offers services for 182
SANITATION, factory, *see* under specific heads, such as Ventilation, Lighting, Heating, Sewage, etc.
for munition plants..... 57
safety and health organization, plan for, in shops . 17, 23
SATURNISM, *see* Lead poisoning.
SCHOOLS, *see also* under Education.
SCHOOLS and retail stores, safety from fires in..... 130
continuation, in industrial areas (Loughborough) .. 51
continuation, teaching in..... 101
evening and part-time, in textile industry..... 50
for managers (Schoen)..... 172
medical inspection of, in N. Y. City..... 37
medical statistics, proper use of (Priestley)..... 186
of work, psychological foundations of (Ferrière) 159
safety education in..... 130
safety instruction in (Payne)..... 90, 130, 193
schoolchildren, *see* Children, school.
unit trade, establishment of, in cities of 25,000 or over (Wing)..... 86
SCIENTIFIC MANAGEMENT, positive contributions to (Farquhar)..... 51
SCORBUTUS, experimental (Weill and Mouriquand)... 25
SEPTIC tanks, capacities of (Peters)..... 179
SEWAGE and sewage sludge, economic values in (Wells) 179
control of small treatment works (Edmonson)..... 95
disinfection of (Wigley)..... 179
disposal plant at industrial housing development of Alanwood Iron and Steel Company (Robinson) . 42
disposal, report of North Carolina board of health on..... 112
electrical treatment of, Landreth direct-oxidation process (Creighton and Franklin)..... 152
sludge, economic values in..... 179
testing-station experiments..... 179
the labeled privy..... 114
treatment studies..... 179
SHAFTING, belting, and pulleys, protection of 39
SHELLACS, standards for use of..... 131
SHELL-SHOCK analogues in civil life (Jarrett)..... 172
SHIPYARDS, emergency, sanitation in (Stevenson).... 14
shipping board protects health of workers in..... 19
SHOCK, traumatic toxemia, a factor in..... 91
SHOE and boot industry, wages and hours of labor in. 181
dye, case of cyanosis due to poisoning by (Stifel)... 9
dye, methemoglobinemia due to poisoning by (Stifel) 9
industry, tuberculosis in..... 147
SHOULDER, stiff and painful (Brown)..... 132
SICK, care of, in U. S. in 1919 (Goldwater)..... 34
SICKNESS, disabling, among population of seven cotton-mill villages in relation to family income (Sydenstricker, Wheeler, and Goldberger)..... 48
records for industrial establishments..... 170
SILK manufacturing, output and health of workers in, as related to hours of work..... 92
SKELETAL damage, nutritional, roentgen findings in (Staunig)..... 133
SKIN diseases produced by lubricants..... 174
injurious effects of oils and vaselines on (Bettmann) 129
investigation into effect on, and infective character of lubricating compound (Deeds)..... 22
occupational affections of (Hubbard)..... 22
preparation of, for operation (Soresi)..... 195
SLAUGHTER-HOUSES, cleanliness in (Lohoff)..... 37
industrial (Rippert)..... 32
reorganization of abattoir in La Villette (Martel) .. 123
SLAUGHTERING and meat-packing industry, wages and hours of labor in..... 182
SMOKING, effects of, on mental and motor efficiency (Johnson)..... 65
SOCIAL case-work, psychiatric thread in (Jarrett).... 87
hygiene..... 142
hygiene and the war..... 106
hygiene congress, resolutions on industrial hygiene. 121

PAGE

Social hygiene, foundation of German society for (Hanauer) 64
hygiene legislation in 1917 (Mayer) 53
hygiene, reviews of (Elster) 64, 156
worker, teacher as (Williams) 123
Soldiers and sailors, pensions and training for disabled (Devine assisted by Brandt) 118
blinded, *see* Blind.
care of wounded man in war (Bowlby) 193
defects found in drafted men (Davenport and Love) . 170
effects of epinephrin on basal metabolism in, with irritable heart, in hyperthyroidism and in normal men (Tompkins, Sturgis, and Wearn) 124
placing, on farm colonies (Mead) 18
re-employment of and special courses for (Best) ... 102
rehabilitation of, *see* Rehabilitation.
variations in strength and in consumption of food by recruits and seasoned troops (Howe, Mason, and Dinsmore) 133
South Carolina commission of agriculture, commerce, and industries, report of, 1918 36
South Dakota industrial commissioner, report of, 1918 61
Sprinklers, automatic, code for 27
Starvation disease (Porges and Wagner) 150
Steel and iron industries, accidents in 23
and iron industries, safety movement in 23
and iron industries, wages and hours of labor in ... 181
Stores, retail, and schools, safety from fires in 130
Stream pollution and its relation to chemical industries (Phelps) 136
Street accidents, reducing hazards of peace (Johnson) 107
Sulphuric acid, cancer following burn from (Mishell). 190
Surgery, cineplastic, clinico-statistical contribution to (Pellegrini) 91
cineplastic surgery and prostheses (Stassen) 91
orthopedic, first French congress on (Mouchet) 176
orthopedic reconstruction of German wounded 24
reconstructive (Nutter) 18
reconstructive, endoprotheses of reinforced rubber for losses of skeletal bone (Delbet, Girode, and Contremoulin) 132
reconstructive, of hand (Wilson and Hyman) 193
Survey, sanitary, *see* Sanitary survey.
Syphilis, *see also* under Venereal disease.
Syphilis, antiluetic treatment followed by jaw necrosis (Schulze) 125

Tannery wastes, purification of (Hommon) 180
Teacher as social worker (Williams) 123
training applied to trades and industries (McKinney) 122
Telegraphers, mental tests for (Thurstone) 97
Telephone companies, nursing work in (Toering) ... 181
operator, work of (Fontègne and Solari) 81
Temperature, automatic regulator of 135
Tennessee department of workshop and factory inspection, report of 36
safety standards for use in workshops and factories in 55
workmen's compensation legislation in 117
Tests, air service, of aptitude for flying (Henmom) .. 97
mental, *see* Mental tests.
trade, *see* Trade tests.
Textile industry, evening and part-time schools in ... 50
workers, short-hour campaign of (Golden) 158
Theatres, outdoor industrial (Mackay) 168
Tin, metallic and oxide of, effect of, in furunculosis (Frouin and Grégoire) 54
Tin-Plate manufacture, fatigue in 149
Town, *see also* under City.
Town of Kipawa (Adams) 27
planning (Adams) 14
planning in Canada (White) 14
planning in relation to industrial development (Kirkpatrick) 166
plan of, and the factory (Duff) 181

PAGE

Trade tests, use of, in army and industrial establishments (Bingham) 97
Tradesmen, educational differences among (Toops and Pinter) 50
Transportation, employment of women in 133
workers, hygiene of (Merkel) 186
Trinitrotoluene poisoning (Legge) 105
poisoning (Voegtlin, Hooper, and Johnson) 68
poisoning, experimental (Kramer and Meierhof) 145
Tuberculosis, agricultural and industrial community for arrested cases of, and their families (Pattison) 69
Anti-Tuberculosis Association of Michigan, activities of, in 1919 (Van der Slice) 106
cement inhalation and its effect upon tuberculous lungs (Nagai) 146
city survey, findings in (Armstrong) 53
climate in treatment of 190
directories of national association 127
employment of rest and exercise after tuberculous patients have returned to work (Kinghorn) 147
factory for convalescent patients 174
fighting, in France (Wing) 52
from angle of expert (Otis) 190
greater facilities needed for care of tuberculous soldiers and civilians (Price) 39
in boot and shoe industry 147
in dusty trades, preliminary report of committee on mortality from 52
in dusty trades, second preliminary report of committee on mortality from 146
in industrial establishments, danger of (Tedeschi) .. 8
in industry, prevention of (Armstrong) 39
in New York City in 1918 (Harris) 173
in workers in the ceramic and porcelain industry ... 142
neighborhood organization vs. (Nelson) 190
North Carolina campaign against 173
patients need not be sent west 173
predisposing causes of (Smith) 106
prevalence and cause of, among industrial workers, especially female munition workers 147
prevention and treatment of, in Maine (Young) ... 173
spread of, special hazards in certain occupations 88
what sick and crippled men are doing for Ford Motor Company (McLeod) 30
working ability and earning capacity of tuberculous individuals (Rothschild) 32
Turpentine, lead and benzine poisoning, frequency of, in 402 painters (Harris) 52
Typhoid, atropine as diagnostic agent in (Marris) ... 89
Mary (Soper) 89

Union scale of wages and hours of labor 188
United States Public Health Service pamphlet, "Cancer: Facts which Every Adult Should Know," a booklet for laymen 188
Uranium, solubility of oxide of, in artificial and human gastric juice (Karsner, Reimann, and Brooks) 146

Vacation, is long summer, necessary? (Fenton) 172
Vaselines, *see* Lubricants.
Vegetables, dried, for army use (Prescott) 133
Venereal Disease, *see also* under Syphilis.
Venereal Disease, act to prevent spread of 70
antivenereal-disease and sex-hygiene program for negroes (Brown) 89
case reports, value of 128, 148
clinics (advisory) for, in New York 128
clinics for 39, 90
control activities (Herdliska) 128
control of, dentists co-operate in 148
control of, druggists aid in 128
control of, in Alabama 106
control of, in Finland (von Hellens) 90
control of, in industry, U. S. P. H. S. plan for 127
control of, in Massachusetts (Thomson) 106
control of, in New Jersey 106

PAGE

VENEREAL DISEASE, control of, physicians aid in.... 70
control of, in Wisconsin..... 128
control of, is education a worth-while factor in (Kleinschmidt)..... 70
control of, public health service program for (Pierce) 53
control of, rôle of public health nurse in..... 113
control of, value of publicity in (Shapiro)..... 128
control of, year's progress in (Seymour)..... 54
development of clinical facilities in crusade against (Lakeman)..... 107
division of, U. S. P. H. S., July report..... 127
education and publicity campaign for the control of, in New Jersey (Smith)..... 128
employment of infected persons..... 39
in Ohio..... 89
laboratory diagnosis of..... 128
legislation concerning, in Connecticut..... 70
management of, by U. S. war department (Keys).. 69
management of, in Egypt during the war (Barrett).. 90
medical and social aspects of (Bates)..... 53
a national problem (Edler)..... 148
new way of combating (Blaschko)..... 90
prevalence of..... 53
prevention of, "Today's World Problem in Disease Prevention," a book for laymen..... 174
prophylaxis for..... 70
publications on..... 53
public health service campaign against (Pierce).... 174
quarantine in, right of..... 106
relation of, to measures for child welfare (Bennett).. 148
suggestions for community action against (Jewell). 174
systematic care in (Clark)..... 32
treatment of patient with (Kleinschmidt)..... 174
unlawful to advertise remedies for..... 70
Wassermann test, diagnostic value of..... 128
VENTILATION and heating of workshops..... 58
and heating problems (Nygren)..... 135
and heating, requirements and standards for (Nygren and Hering)..... 13
equipment for, reduces mortality during winter (Hill) 152
humidity as factor in, and value of window opening in fully occupied rooms with small temperature difference from outside air (Selter and Esch).... 13
legal liability of employer for lack of..... 95
more air for offices and drafting rooms (Hubbard).. 152
opportunity for improvement of, in industrial buildings (Allan)..... 27
rôle of, in preventive medicine (Palmer)..... 178
VOCATIONAL, choosing vocation in junior high school (Whitney)..... 160
counsellor and his work (Stone)..... 160
education, effect of war on (Bogan)..... 64
education, evening and part-time schools in textile industry..... 50
education, federal board for, third annual report of.. 188
education, how to get "better-than-new" workmen (Heywood)..... 31
education, lessons from the war on..... 102
education, publications of federal board for..... 62
education, work of federal board for, in assisting disabled..... 29
fundamentals for teachers of vocation (Smith).... 86
school, part-time, evening, and all-day (Munroe)... 86
supervision, report of committee on (Moore)..... 51

WAGES and hours of labor in the boot and shoe industry..... 181
and hours of labor in the coal mining industry.... 181
and hours of labor in the iron and steel industry.... 181
and hours of labor in the slaughtering and meat-packing industry..... 182
and hours of labor, union scale of..... 188
of candy makers in Philadelphia..... 182
WAR communities, present and future government of (Cawcroft)..... 14
workers, industrial diseases of (Hamilton)..... 67
WASHINGTON bureau of labor, report of, 1917–18.... 48
WASHROOM, factory facilities, standards for..... 135

PAGE

WASHROOM, factory facilities, standards for (Coolidge) 95
WASSERMANN test, diagnostic value of..... 128
WASTES, *see also* under specific wastes, i.e., canning—plant, tannery, etc.
WASTES, factory, Wisconsin control of..... 95
trade-waste treatment studies in Wisconsin (Tully) 58
WATER, factory supply (Hubbard)..... 58
"red water," prevention and cure of (Walker).... 178
supplies and drinking devices, how they may spread bacterial diseases (Stovall and King)..... 95
supplies, check valves between public and private (Saville)..... 179
supply and sanitary engineering..... 178
WELDERS, mask and protecting garment for (Cammell Laird and Company)..... 165
WELDING, electrical, and appliances for..... 25
oxyacetylene, rules for..... 39
with oxyacetylene torch, dangers of (Hulst)..... 104
WELFARE supervision of factories..... 137
work, effects of, in industry..... 60
work, industrial..... 157
work of British ministry of munitions..... 28
work that spares no expense (Armstrong)..... 154
WEST VIRGINIA bureau of labor, report of, 1917–1918 . 48
WISCONSIN, control of venereal disease in..... 128
WOMEN IN INDUSTRY (Hubbard)..... 110
British..... 94
British munition workers..... 26
bureau of (Lynch)..... 57
conditions of, in paper box industry..... 158
earnings of, in five industries..... 25
eight-hour day for..... 111
employment and substitution of, during the war... 151
employment of, effect of war on (Anderson)..... 94
employment of, in acetylene welding (Fisk)..... 95
employment of, in Niagara Falls..... 25
employment of, in the railroad world (Goldmark)... 177
employment of, in transportation..... 133
equal pay for (Barton)..... 151
extent and effect of substitution of (Anderson).... 110
federal policies for (Van Kleeck)..... 12
food requirements and energy expenditure of (Rosenheim)..... 150
handling of..... 72
in the lead industry (Hamilton)..... 177
Japanese..... 94
labor laws for, in Indiana..... 56
minimum wage for, in British Columbia..... 94
output of, in relation to hours of work in shell-making..... 177
prevalence and cause of tuberculosis among industrial workers, especially female munition workers. 147
replacement of men by..... 111
reward for war work (Black)..... 133
safeguards required for (O'Shea)..... 23
standards (federal) for employment of..... 25
standards for employment of..... 56
standards for employment of, in California laundries and manufacturing industries..... 94
standards for, in peace time..... 71
training and upgrading of (Burdick)..... 110
wages of, in Manitoba..... 60
war-time participation of (Lord)..... 109
wastage of labor in munition factories employing women..... 151
welfare of children of..... 111
work and welfare of..... 109
work garments for (Guthrie)..... 57
working hours of..... 13
WORK age level, problems of (Ide)..... 177
at night, *see* Night Work.
curves (Garth)..... 149
day, physiology of..... 92
"hygiene researches" of W. Weichardt and H. Lindner, comment on (Weber)..... 11
mechanical, cost of, in terms of CO_2 expired (Waller)..... 41
WORKMAN, hospital for, prospectus of..... 153
securing initiative of..... 85

PAGE

WORKMEN'S COMPENSATION, *see also* under Compensation.
WORKMEN'S COMPENSATION Act, court decisions on.. 138
Act, explosion of chemicals under (Sherlock)..... 168
Act, medical and hospital treatment under U. S. (Trask)..... 195
Act, selection of physician under (Mowell)..... 81
Act, settlements under, in New York..... 117
and industrial diseases:..... 185
conflict of compensation acts (Sherlock)..... 45
lacks in (Meeker)..... 44
laws in U. S. through 1917, comparison of..... 28
laws, medical benefits and medical profession under (Hookstadt)..... 81
laws, provision for second injuries in (Hookstadt).. 116
laws, significance of " medical service " in (Frincke) 116
legislation in Missouri, North Dakota, and Tennessee..... 117
legislation in U. S. and abroad..... 28
legislation of 1919 (Clark)..... 195
liability of employer for hospital, surgical, and medical aid under (Sherlock)..... 45
loss of eye greater than loss of sight..... 184
loss of one member before employment and one after 185
report of Idaho industrial accident board, 1918, on.. 61

PAGE

WORKMEN'S COMPENSATION, report of Nebraska departments of labor and compensation, 1917–18, on 60
report of South Dakota industrial commissioner on . 61
right to select physician or hospital under..... 195
shall ambitious cripple lose benefits of? (Hookstadt)..... 46
vs. employer's liability systems (Hookstadt)..... 45
WORKSHOPS, heating and ventilation of..... 58
safety standards in, in Tennessee..... 55
WOUNDS, *see also* under names of special parts, i. e., face, head, nerve, etc.
WOUNDS, gunshot, primary and delayed primary suture of (Fraser *et al.*)..... 40
gunshot, primary suture of (Koch)..... 132
of eyeball, maximum physiologic lymphatic reaction in (Jones)..... 191
of fingers and toes (Descomps and Ducartaing) ... 24
skull, primary suture for (Chauvin)..... 193
war, primary and secondary suture of (Pool)..... 193
war, primary suture of (Vaughan)..... 40
WYOMING commissioner of labor statistics, report of, 1917–18..... 49

ZINC, arsenic and copper, normal content of, in human body (van Itallie)..... 104

AUTHOR INDEX TO VOLUME I

PAGE

Abderhalden, E.: Studies on the Influence of the Type of Diet 133
Adams, T.: Housing Development as a Post-War Problem in Canada 137
Adams, T.: Reconstruction in Great Britain 58
Adams, T.: The Town of Kipawa 27
Adams, T.: Town Planning 14
Addams, J., and Hamilton, A.: After the Lean Years. Impressions of Food Conditions in Germany When Peace Was Signed 123
Addis, T.: A Pulse Rate Standard for Recruits 8
Adler, H. M.: Disciplinary Problems of the Army . . 171
Affleck, G. B.: Selected Bibliography of Physical Training and Hygiene 64
Aimes, A.: The Technique of Heliotherapy 132
Albaugh, R. P.: Wood Dust — Its Effect on Health. 10
Albee, F. H., assisted by Morrison, H. F.: Studies in Bone Growth 194
Alden, F. D.: Community Recreation from the Point of View of Physical Education 183
Alden, P.: The Health of Manchester 153
Alexander, M. W.: Cost of Health Supervision in Industry 34
Alger, E. M.: A New Malingeroscope 97
Allan, E. C.: Opportunity for Better Ventilation in Industrial Buildings 27
Allen, L. H.: The Cost and Value of Good Housing to Our Industrial Life 153
Allison, V. C., and Katz, S. H.: An Investigation of Stenches and Odors for Industrial Purposes 71
Allport, F., and Smith, J. R.: A Trial Frame for Eye Malingering 195
Allport, F., and Wilson, B.: Report of a Case of Steel in the Larynx 39
Alvord, J. W.: What Part the Engineer Played in Government Housing 15
Amsden, A. S.: Systematic Study of the Personality in Estimating Adaptability 59
Anderson, A. M.: Effect of the Third Year of War on Industrial Employment of Women and Girls 94
Anderson, A. M.: Extent and Effect of Substitution of Women and Girls in Industry 110
Anderson, R. J.: The Practicability of Feeding a Scientifically Balanced Ration in Army Corps 133
Anderson, V. V.: Mental Defect in a Southern State . . 172
Andrews, J. B.: Labor Problems and Labor Legislation 121
Andrews, J. B.: Limitations of Occupational Disease Compensation 17
Angermyer, H. C.: *See* Winslow, C.-E. A.
Apitzsch, H.: *See* Weichardt, W.
Armstrong, D. B.: The Prevention of Tuberculosis in Industry 39
Armstrong, D. B.: Tuberculosis Findings in a City Survey 53
Armstrong, R. C.: A Welfare Work That Spares No Expense 154
Arnold, E. H.: What the War Should Do for Our Methods in Physical Education 64
Aronovici, C.: Organized Leisure as a Factor in Conservation 16
Arps, G. F.: National Supremacy, Industrial Education and Co-operation 158
Arthur, G., and Woodrow, H.: An Absolute Intelligence Scale: A Study in Method 97
Averill, L. A.: The Problem of Malnutrition in School Children 71

Bacot, A.: Lice: The Diseases Carried by Them and the Measures Available for the Protection of Children and Civilians 160
Bailey, W. L.: The Greater Community 113

PAGE

Baker, D. V.: Flat Feet and Leg Muscle Strain Related to Industry in Cause 40
Baldwin, B. T.: Helping the Wounded Soldier to "Come Back" 81
Ball, E. J.: The Epidemiology of Influenza among Workers 89
Ball, J. D.: The Correlation of Neurology, Psychiatry and General Medicine as Scientific Aids to Industrial Efficiency 84
Ballard, E. F.: The Psychoneurotic Temperament and Its Reactions to Military Service 59
Balthazard, V.: Present Ideas of Carbon Monoxide Poisoning 88
Bamberger, A.: Acute Septic Infections of the Fingers 40
Barbour, H. G.: Drugs after Chlorine Gassing. II. Observations upon the Treatment of Gassed Dogs with Circulatory Stimulants 146
Barbour, H. G., Hjort, A. M., and Taylor, F. A: Drugs after Chlorine Gassing. I. The Influence of Morphine upon the Fatality of Chlorine Poisoning. 146
Barbour, H. G., and Williams, H. W.: The Effects of Chlorine upon Isolated Bronchi and Pulmonary Vessels 146
Bardeen, C. R.: Medical Supervision of Students at Wisconsin 141
Bargeron, L.: Application of the Laws on Industrial Hygiene to Small Establishments 138
Bargeron, L.: Hygiene in the Reconstruction of Factories after the War 134
Bargeron, L.: The Protection of Expectant Mothers at Work during the War 133
Barlocco, A.: Metabolism in Mercuric Chlorid Poisoning 189
Barrett, J. W.: The Management of Venereal Diseases in Egypt during the War 90
Barth, G. P.: Health Supervision of Working Children 57
Barton, D. M.: Equal Pay for Equal Work 151
Barton, E.: England's Care of Mothers — Essentials for Public Care of Maternity and Infancy 152
Bates, G.: Medical and Social Aspects of the Venereal Disease Problem 53
Bauer, S.: The Road to the Eight-Hour Day 121
Bawden, W. T.: Industrial Arts in Reconstruction . . 51
Bayet, A., and Slosse, A.: Arsenic Intoxication in the Industries of Coal and Its Derivatives 66
Bayet, A., and Slosse, A.: Arsenic Poisoning from Coal Products 161
Beard, J. H.: Physical Rejection for Military Service: Some Problems of Reconstruction 64
Beistle, C. P.: Shipping Containers 175
Bellhouse, G.: Accident Prevention and Safety First . . 164
Bellhouse, G.: Continuation Classes 159
Bellhouse, G.: Hours of Work and Emergency Orders. 115
Benjamin, J. E., and Brooks, E. R.: Two New Diagnostic Methods for Patients with Cardiac Disease . . 20
Bennett, V. E. M.: Venereal Disease in Relation to Measures for Child Welfare 148
Benoit: Bulbar Syndrome of the Coal Miners 123
Berg, R.: *See* Rose, C.
Berghoff, R. S.: The More Common Gases: Their Effect on the Respiratory Tract 189
Best, P. A.: Giving Soldiers the Best Chance 102
Bettmann: The Injurious Effects of Oils and Vaselines on the Skin 129
Billings, F.: Rehabilitation of the Disabled 81
Bingham, W. V.: Army Personnel Work: With Some Implications for Education and Industry 59
Bingham, W. V.: Measuring a Workman's Skill: The Use of Trade Tests in the Army and Industrial Establishments 97
Bird, F. H., and Merritt, E. A.: Administration of Child Labor Laws. Part 3. Employment Certificate System, Maryland 134

PAGE

Bisch, L. E.: Eliminating the Epileptic from the Navy 7
Bisch, L. E.: A Routine Method of Mental Examinations for Naval Recruits 44
Black, C.: The Women's Reward 133
Blair, T. S.: Narcotic Drug Addiction as Regulated by a State Department of Health 36
Blaschko, A.: A New Way of Combating Venereal Diseases 90
Blatherwick, N. R.: Note on the Acid-Base Balance of Army Rations 133
Bloedorn, W. A.: Drug Addiction 32
Blum, A. N.: Technical Features of Disston Cafeteria 137
Boate, G. A.: Industrial Surveys of the Leather Industries 62
Bogan, W. J.: What the War Should Do for Our Methods in Vocational Education 64
Bondfield, M.: Some Lessons of the British Health Insurance Act 139
Bonsib, R. S.: How to Give Illustrated Lectures on Accident Prevention to Workmen 55
Bornstein, A.: The Falling Sickness of Divers 41
Bowlby, A.: Care of the Wounded Man in War 193
Brackett, E. G.: Productive Occupational Therapy in the Treatment of the Disabilities of the Extremities 31
Bradley, J.: Governmental Provision for the Blinded Soldier 62
Brandenburg, G. C.: *See* Roberts, G. L.
Brandt, L.: *See* Devine, E. T.
Briggs, J. E.: Gangrene Following Carbon Monoxid Poisoning 189
Brooks, E. R.: *See* Benjamin, J. E.
Brooks, S. C.: *See* Karsner, H. T.
Brown, A. J.: A Contribution to the Study of "Stiff and Painful Shoulder" 132
Brown, R. C.: Antivenereal-Disease and Sex-Hygiene Program for the Colored Population 89
Browne, A. D.: Physical Education in the Light of the Present National Situation 64
Burdick, A. L.: Initial Training and Upgrading of Women Workers in Factory Industries 110
Burnham, W. H.: Success and Failure as Conditions of Mental Health 188
Burrell, G. A., and Gauger, A. W.: Vitiation of Garage Air by Automobile Exhaust Gases 88
Bush, C.: The Seattle Plan of Home-Building 114

Calder, J. E.: Training the Foreman 107
Calkins, R.: Substitutes for the Saloon 115
Callen, A. C.: Educating the Coal Miner in Subjects Pertaining to Mining 103
Calmette, A.: The Question of Workmen's Lodgings in Lille after the War 96
Cammell Laird and Company: Mask and Protecting Garment for Welders 165
Candler, M.: America's New Physical Education Service 86
Carney, C. S.: National Conference on Americanization in Industries 143
Carpenter, C. C.: *See* Chase, H. W.
Carter, H. R.: The Malaria Problem of the South 127
Cass, D.: Cardiovascular Examinations of Recruits at Camp Lewis Mustering Office, April 20 to October 1, 1918 7
Catton, J.: Gas Warfare — Its Aftermath 87
Cawcroft, E.: The Present and Future Government of War Communities 14
Chamberlain, H.: The University of Iowa as a State Medical Centre 141
Chandler, Mrs. G. B.: Report of National Child Labor Committee 152
Chaney, L. W.: "Engineering Revision" as Seen by Safety Committees 23
Chaney, L. W.: Influence of the War on Accident Rates in Machine Building 98
Chaney, L. W.: War-Time Trend of Employment and Accidents in a Group of Steel Mills 192

PAGE

Chaney, N. K.: *See* Lamb, A. B.
Chantler, T. F.: Improving Shop Efficiency by Better Lighting 135
Chapman, J. C.: Mental Tests in Industry 59
Chase, H. W., and Carpenter, C. C.: The Response of a Composite Group to the Stanford Revision of the Binet-Simon Tests 154
Chassevant, A.: Practical Instruction in Hygiene in Medical Schools 85
Chaund, W. H.: Architectural Effort and Chinese Nationalism: Being a Radical Interpretation of Modern Architecture as a Potent Factor in Civilization 142
Chauvin, E.: Primary Suture for Skull Wounds 193
Chenet: Harvesters' Keratitis 191
Childs, R. S.: The Government Model Villages 28
Childs, R. S.: What Will Become of the Government Housing? 14
Childs, R. S.: *See* Rex, F.
Chubb, I. S.: Some Problems of the Partially Disabled, in War and Industry 17
Clark, J. B.: Systematic Care in the Sexual Diseases 32
Clark, L. D.: Workmen's Compensation Legislation of 1919 195
Clark, W. A.: From the Foreman's Point of View 107
Clewell, C. E.: Industrial Lighting 27, 95
Clewell, C. E.: What It Pays to Know about Factory Lighting 112
Clewell, C. E.: What It Pays to Know about Factory Lighting: How to Regulate Your Window Light 135
Clopper, E. N.: Child Labor and School Attendance 111
Clough, H. D.: Effect of Epinephrin on the Electrocardiogram of Patients with "Irritable Heart" 124
Coblentz, W. W.: Recent Progress in the Manufacture of Glasses for Protecting the Eye from Injurious Radiations 107
Cohen, D. I.: Investigation into the Cases of One Hundred Boys Who Left School to Go to Work 103
Collins, C. F.: The Drug Evil and the Drug Law 36
Commons, J. R.: A Reconstruction Health Program 139
Contremoulin: *See* Delbet.
Coolidge, L. A.: Standards for Factory Washroom Facilities 95
Cosgrove, J. J.: An Important Feature in Plumbing Specifications 179
Cotton, T. F., and Lewis, T.: Observations upon Fainting Attacks Due to Inhibitory Cardiac Impulses 20
Cove, G.: Housing the Workers — An Unfinished Job 14
Cowdery, K. M.: A Statistical Study of Intelligence as a Factor in Vocational Progress 182
Cowdery, K. M.: *See* Lincoln, E. A.
Crafts, L. W.: Bibliography of Feeble-Mindedness in Its Social Aspects 66
Creighton, H. J. M., and Franklin, B.: Electrical Treatment of Sewage: The Landreth Direct-Oxidation Process 152
Cummings, A. C.: Rupture of Cast Iron in Contact with Mixed Acid 22
Cummings, J. G.: A Brief Review of Indirect Contact Transmission and a Preliminary Report of Corroborative Laboratory Research 54
Curtis, J. N.: Point Scale Examinations on the High-Grade Feebleminded and the Insane 182

Daniels, A. L., and McClurg, N. I.: Influence of High Temperatures and Dilute Alkalies on the Antineuritic Properties of Foods 12
Davenport, C. B., and Love, A. G.: Defects Found in Drafted Men 170
Davenport, F. M.: Political Expediency as Well as Social Justice Calls for Action on Health Insurance 139
Dean, A. E.: The Education Act of 1918 159
Deeds, F. E.: Investigation into Dermatic Effect and Infective Character of a Lubricating Compound 22
De Hoit, S.: Our Shop Dental Dispensary 136
Delbet, Girode, and Contremoulin: Endoprotheses of Reinforced Rubber for Losses of Skeletal Bone 132

PAGE

De Leon, S.: Year's Developments Toward Health Insurance Legislation 17
Delgado, H. Y.: National Problems of Mental Health 49
Demault, A.: On Several Cases of Evaluation of Incapacity for Work after Ocular Accidents 107
Denis, W., and Minot, A. S.: A Method for the Determination of Minute Amounts of Lead in Urine, Feces, and Tissue 145
De Sanctis, S.: The Psychology of Vocation 60
Descomps, P., and Ducartaing, R.: Wounds of the Fingers and Toes 24
Desgrez, A., and Labat, A.: On a Method of Detecting Carbon Monoxide 88
Devine, E. T., assisted by Brandt, L.: Disabled Soldiers and Sailors: Pensions and Training 118
Dewson, M. W.: Minimum Wage Commissions: Current Facts, January, 1920 188
Diamond, T.: *See* Foulkes, T. R.
Dieter, L. V.: The Relative Sanitary Values of Different Types of Drinking Fountains. Part I. The Results of Tests of Vertical-Nozzle Types 166
Dieter, L. V.: The Relative Sanitary Values of Different Types of Drinking Fountains. Part II. How the Fountains Are Used, and the Results of Tests of Sloping Stream Types 178
Dinsmore, S. C.: *See* Howe, P. E.
Doizy: On the Creation of Inspectors of Industrial Hygiene 158
Donnelly, L. C.: Results Obtained by Treating Weak Feet along Military Lines among Civilians 24
Douglas, P. H.: An After-Care Clinic in Oregon 46
Douglas, P. H., and Wolfe, F. E.: Labor Administration in the Shipbuilding Industry during War Time 51
Douglas, P. H., and Wolfe, F. E.: Labor Administration in the Shipbuilding Industry during War Time. II 63
Douglas, W.: *See* Hale, G. E.
Dow, M. A.: Methods of Securing Attendance at Railroad Safety Meetings 130
Downing, A. F.: Lest We Forget. A Study of Health Insurance in Relation to the History of the Two Countries Where It Has Found Most Favor 45
Drexel, C.: Rehabilitation and Vocational Training of War Cripples 18
Dublin, L.: Health Conditions in Southern Europe . . 35
Ducartaing, R.: *See* Descomps, P.
Duff, L. B.: The Town Plan and the Factory 181
Dunlap, J. H.: Common Sense, Science, and Drinking Fountains 42
Dunn, B. W.: Defense against Dangerous Articles . . . 148

Eastman, G.: *See* Hale, G. E.
Edgar, A. B.: *See* Wilson, F. N.
Edler, W.: Venereal Disease: A National Problem . . 148
Edmonson, J. H.: Efficient Control of Small Sewage Treatment Works 95
Elkus, A. I.: International Labor Legislation and How It Can Be Enforced in the United States 157
Elliott, R. W.: How We Keep Our Men Well 28
Elliott, R. W.: Keeping Workers Well — The Part the Factory Dentist Plays 58
Ellms, J. W.: Ozone as a Disinfectant in Water Purification 152
Elster, A.: Chronicle of Social Hygiene 64
Elster, A.: Reviews of Social Hygiene 156
Emerson, C. A., Jr.: *See* Royer, B. F.
Erdheim, S.: Injury Due to Indelible Pencil 132
Esch, A.: See Selter, H.
Estes, W. L., Jr.: A Study of the Causes of Delayed Union and Non-Union in Fractures of the Long Bones 194

Fahr, G. E., *et al.*: Cardiovascular Examinations of Fifty-Five Thousand Recruits 7
Faries, J. C.: Re-educating the Disabled Man 82
Farquhar, H. H.: Positive Contributions to Scientific Management 51
Fauntleroy, A. M., and Hoagland, A. W.: The Treatment of Burns 108

PAGE

Fay, A. H.: Coke-Oven Accidents in the United States during the Calendar Year 1917 . . . . . 12, 90
Fay, A. H.: Metal Mine Accidents in the United States during the Calendar Year 1917 90
Fay, A. H.: Monthly Statement of Coal Mine Fatalities in the United States for January and March, 1919 98
Fay, A. H.: Production of Explosives in the United States during 1917 19
Fay, A. H.: Quarry Accidents in the United States during the Calendar Year 1917 90
Fenton, H. J.: Is the Long Summer Vacation Necessary? 172
Ferrière, A.: The Psychological Foundations of the "School of Work" 159
Ferry, G.: Blood Pressure of Aviators 189
Fieldner, A. C.: Industrial Use and Limitations of Respirators, Gas Masks, and Oxygen Breathing Apparatus 39
Fieldner, A. C.: *See* Perrott, G. St. J.
Fieldner, A. C., Oberfell, G. G., Teague, M. C., and Lawrence, J. N.: Method of Testing Gas Masks and Absorbents 124
Fieldner, A. C., Teague, M. C., and Yoe, J. H.: Protection Afforded by Army Gas Masks against Various Industrial Gases 124
Fischer, A.: Taking the Guesswork out of Employment 158
Fish, E. H.: The Principles of Employing Labor 28, 80
Fisher, B.: Good Housing as a Reducer of Labor Turnover 153
Fisher, I.: Humanizing Industry 35
Fisk, H. G.: Employment of Women in Acetylene Welding 95
Fontègné, J., and Solari, E.: The Work of the Telephone Operator 81
Ford, J.: Bad Housing and Ill Health 136
Fossataro, E.: Late Effects of Injuries of the Head on the Ability to Work 91
Foster, M. H.: *See* Stimpson, W. G.
Foulkes, T. R., and Diamond, T.: Argument for Larger Projects Suggestive of Community Activity. 159
Franklin, B.: *See* Creighton, H. J. M.
Franz, S. I.: Mental Tests 96
Fraser, F., *et al.*: Primary and Delayed Primary Suture of Gunshot Wounds 40
Frazier, C. H.: Surgical Problems in the Reconstruction of Peripheral Nerve Injuries 194
Frazier, C. H., and Silbert, S.: Observations in Five Hundred Cases of Injuries of the Peripheral Nerves at U. S. A. General Hospital No. 11 194
Friedel, V. H.: The Interallied Congress of Hygiene in Paris 142
Frincke, M. C., Jr.: What the Term "Medical Service" in Workmen's Compensation Laws Includes 116
Frouin, A., and Grégoire, R.: Effect of Metallic Tin and Tin Oxide in Staphylococcus Infections (Furunculosis) 54
Führer, H.: Cyanide Poisoning and Its Treatment . . 145
Fuld, L. F.: The Problem of Fatigue 164

Garnett, J. C. M.: General Ability, Cleverness and Purpose 97
Garth, T. R.: Work-Curves 149
Gauger, A. W.: *See* Burrell, G. A.
Gebhart, J. C.: Filling in the Gaps of Child Life 178
Geddes, P.: Public Health in the Industrial Age 99
Gegenbauer, V.: The Seymour-Jones Sublimate-Formic Acid Method for the Disinfection of Anthrax-Infected Furs and Skins 11
Geier, O. P.: Education in Industrial Medicine 86
Geier, O. P.: Human Relations Department from the Standpoint of the Industrial Physician 65
Geier, O. P.: The Physician and the Surgeon in the Industrial Crisis 156
Geier, O. P.: The Physician and Surgeon in the Industrial Era 188
Georgia, F. R.: Field Methods for the Chlorination of Small Amounts of Water 178

PAGE

Gibson, J. L.: On the Importance of De-ionization in the Treatment of Plumbism in Queensland Children . . . 88
Gibson, K. S., and McNicholas, H. J.: The Ultra-Violet and Visible Transmission of Eye-Protective Glasses . . . 191
Gilbreth, Mrs. F. B.: Fatigue Elimination . . . 109
Girode: *See* Delbet.
Gittings, J. C., and Smith, B.: The Basis for Compensation of the Soldier for Cardiac Disease . . . 29
Givens, M. H., and McClugage, H. B.: The Anti-scorbutic Property of Vegetables. I. An Experimental Study of Raw and Dried Tomatoes . . . 12
Glasgow, M.: Physical Examination of Employees, Giving Statistics of Examination of Employees of the Department of Health . . . 98
Glibert, D.: Occupational Cancer . . . 163
Goeppinger, L.: *See* Wetmore, F. L.
Goldberger, J.: *See* Sydenstricker, E.
Golden, J.: Short-Hour Campaign of the Textile Workers . . . 158
Goldmark, P.: Women in the Railroad World . . . 177
Goldwater, S. S.: The Care of the Sick in the United States in 1919 . . . 34
Graves, R. E.: Hours of Work . . . 164
Greenberg, D.: *See* Winslow, C.-E. A.
Greenburg, L.: *See* Winslow, C.-E. A. (2)
Greenfield, A. D.: Treatment of Drug Addiction . . . 103
Greenwood, H. C., and Zealley, A.T.S.: An Apparatus for the Automatic Estimation of Small Amounts of Oxygen in Combustible Gas Mixtures or of Combustible Gases in Air . . . 37
Greenwood, M., Hodson, C., and Tebb, A. E.: Metabolism of Female Munitions Workers . . . 109, 150
Grégoire, R.: *See* Frouin, A.
Gregor, A.: A Note on the Epidemiology of Influenza among Workers . . . 89
Griffin, C.: The Problem of Drug-Addiction . . . 49
Griffith, I. S.: The Field of Manual Arts in Terms of Present Needs . . . 159
Griswold, F. M.: The Chlorates . . . 131
Gugel, A. F.: Rehabilitation through Systematic Exercise . . . 81
Gunson, E. B.: *See* Meakins, J. C.
Guthrie, A. W.: Suitable Work Garments for Women in Industry . . . 57
Gwinn, D. R.: Water Departments and Private Fire Lines . . . 131

Haden, R. L.: Benzine Poisoning, with Report of a Chronic Case . . . 145
Halbert, L. A.: Community Service as a Builder of Morale for the Institutions of Civic Life . . . 114
Haldane, J. S.: Explosions in Coal Mines . . . 175
Haldane, J. S.: Health and Occupation . . . 49
Hale, G. E., Root, E., Pritchett, H. S., Vail, T. N., Swasey, A., Mellon, A. W., Eastman, G., Douglas, W., MacColl, J. R., and Howe, H. E.: The National Importance of Scientific and Industrial Research . . 170
Hall, B.: Health Service through Employees' Mutual Benefit Association . . . 183
Hall, G. S.: Practical Applications of Psychology as Developed by the War . . . 50
Halliday, S. L.: Guide Posts on the Road to Health . . 49
Ham, W. H.: Housing — Democracy's Balance Wheel 136
Hambrecht, G. P.: Industrial Experience of Handicapped Workmen in Wisconsin . . . 46
Hamilton, A.: Industrial Poisoning in American Anilin Dye Manufacture . . . 37
Hamilton, A.: Occupational Diseases in Pennsylvania 103
Hamilton, A.: War Industrial Diseases . . . 67
Hamilton, A.: Women in the Lead Industries . . . 177
Hamilton, A.: *See* Addams, J.
Hamon, R. J.: *See* Smith, H. I.
Hanauer, W.: The Foundation of a German Society for Social Hygiene . . . 64
Harker, G.: Note on Explosions in Coal Mines . . . 175
Harman, N. B.: Sight Saving Schools . . . 122

PAGE

Harrington, M. A.: Mental Disorder Considered as a Psychological Reaction . . . 87
Harris, L. I.: Clinical Study of Frequency of Lead, Turpentine, and Benzine Poisoning in 402 Painters . 52
Harris, L. I.: Industrial Hygiene . . . 33
Harris, L. I.: Tuberculosis in New York City during 1918 . . . 173
Hase, A.: New Observations on the Life of the Bedbug (Cimex Lectularius, L.) . . . 103
Haskins, M. K.: Goggles in Shipyards . . . 55
Hastings, A. B.: An Investigation of Changes in the Blood and Urine Resulting from Fatigue . . . 132
Hastings, C. J.: Democracy and Public Health Administration . . . 19
Hayhurst, E. R.: Health Hazards of Non-Poisonous Dusts — A Résumé of Some Recent Investigations 173
Hayhurst, E. R.: Health of Ohio Coal Miners . 19, 65, 103
Hayhurst, E. R.: Medical Argument against Night Work Especially for Women Employees . . . 57
Haynes, G. E.: Negroes Move North . . . 14
Hearne, K. C.: Hyperpyrexial Heatstroke . . . 108
Hedenberg, E. L.: The Future of Public Health Nursing in California . . . 180
Hein, G. E.: Effect of Cardiac Distress on the Work of Recruits . . . 7
Henmom, V. A. C.: Air Service Tests of Aptitude for Flying . . . 97
Herdliska, C. V.: Venereal Disease Control Activities . 128
Hering, R.: *See* Nygren, W.
Herman, M.: Contribution to the Study of Lead Intoxication Occurring among Painters . . . 126
Herman, M.: Prophylaxis of the Pitch Disease . . . 163
Herrick, W. R.: Narcotic Drug Control . . . 65
Heyne, H. P.: Experience in Accident Prevention Work . . . 129
Heywood, J.: How to Get "Better-Than-New" Workmen . . . 31
Hijmans, F.: Classification and Reclassification (Rehabilitation) of Workers . . . 30
Hildebrandt, F. M.: *See* Murlin, J. R.
Hill, E. V.: Ventilating Equipment Reduces Mortality during Winter . . . 152
Hitchcock, N.: The War Housing Program and Its Future . . . 79
Hjort, A. M.: *See* Barbour, H. G.
Hoagland, A. W.: *See* Fauntleroy, A.M.
Hodson, C.: *See* Greenwood, M.
Holland, W. D., and Lucas, G. H.: Tenth Annual Report of the Commission of Agriculture, Commerce and Industries of the State of South Carolina, 1918 . . . 36
Holman, D. M.: Practical Experience in Dealing with Industrial Cripples . . . 197
Holmes, P. M.: Health Hazards in the Industries of Niagara Falls, N. Y. . . . 188
Hommon, H. B.: Studies on the Treatment and Disposal of Industrial Wastes. 3. Purification of Tannery Wastes . . . 180
Hookstadt, C.: Comparison of Experience under Workmen's Compensation and Employers' Liability Systems . . . 45
Hookstadt, C.: Compensation for Occupational Diseases in the United States and Foreign Countries . . 61
Hookstadt, C.: Medical Benefits and the Medical Profession under Workmen's Compensation Laws . . 81
Hookstadt, C.: Possibilities of an Industrial Cripple Sustaining a Second Injury . . . 46
Hookstadt, C.: Problems of the Crippled Man in Industry . . . 30
Hookstadt, C.: Provision for Second Injuries under Workmen's Compensation Laws . . . 116
Hookstadt, C.: Shall the Ambitious Cripple Suffer Loss of Workmen's Compensation Benefits? . . . 46
Hooper, C. W.: *See* Voegtlin, C.
Hoskins, R. G.: American Military Hospital Dietaries 133
Howarth, W. H.: City Hygiene in Relation to Employment . . . 166
Howe, G. L.: Cancer . . . 66
Howe, H. E.: *See* Hale, G. E.

PAGE

Howe, P. E., Mason, C. C., and Dinsmore, S. C.: Variations in Strength and in the Consumption of Food by Recruits and Seasoned Troops. 133
Hoxie, F. J.: Roof Construction for Factories with Excessive Moisture. 13
Hubbard, C. L.: More Air for Offices and Drafting Rooms. 152
Hubbard, C. L.: Sanitary Equipment for Industrial Buildings. 95
Hubbard, C. L.: What It Pays to Know about Factory Water Supply. 58
Hubbard, S. D.: Industry and Medicine. 6
Hubbard, S. D.: Occupational Affections of the Skin. 22
Hubbard, S. D.: Why Overhauling of the Human Machine Is Necessary. 170
Hubbard, S. D.: Women in Industry. 110
Hudson, W. G.: Anilin, Rather than Nitrobenzene, as the Poison in Shoe Dye 9
Hulst, J. P. L.: Dangers of Welding with the Oxyacetylene Torch 104
Humpstone, H. J.: The Meaning of a Binet Score. . . 183
Hunt, T. F.: The Future of Agricultural Education. . 160
Huntington, E.: Air Control and the Reduction of the Death Rate after Operations. 165
Huntington, E.: The Interpretation of the Death Rate by Climographs. 34
Hutchinson, W.: Medical Administration of Health Insurance. 117
Hyman, C. H.: *See* Wilson, J. C.

Ide, A. L.: Intelligence and Efficiency Tests Distinguished 80
Ide, G. G.: Some Problems of the Work Age Level. . . 177
Iffland, C.: Reasons Why Night Work Should Be Abolished in Bakeries. 158
Ihlder, J.: Housing and Transportation Problems in Relation to Labor Placement. 14
Ilzhofer, H.: Contributions Regarding the Toxic Action of Aromatic Nitro-Compounds. 8
Ioteyko, I.: The Psycho-Physiological Factor in Industrial Work. 50

Jacoby, A. L.: Disciplinary Problems of the Navy. . . 171
Jagić, N., and Lipiner, J.: Lungs and Breathing in Wind-Instrument Players: A Contribution to the Question of the Development of Emphysema. . 104, 124
Jarrett, M. C.: Shell-Shock Analogues: Neuroses in Civil Life Having a Sudden or Critical Origin. 172
Jarrett, M. C.: The Psychiatric Thread Running through All Social Case-Work. 87
Jenks, H. N.: Sanitary Engineers Get Direct Results in East Indian Mining Camp. 14
Jewell, D. L.: Suggestions for Community Action against Venereal Disease 174
Joachimoglu, G.: The Pharmacology of Arsine. 146
Johnson, F. R.: Reducing the Hazards of Peace. 107
Johnson, J. M.: *See* Voegtlin, C.
Johnson, O. J.: Effects of Smoking on Mental and Motor Efficiency 66
Johnson, R. H.: The Eugenic Aspect of Selective Conscription. 64
Jones, C. T.: The New Moron. 144
Jones, E. L.: The Maximum Physiologic Lymphatic Reaction in Deeply Penetrating Wounds of the Eyeball. 191
Jones, M. L.: *See* Sherwood, W. A.
Jones, R.: Joint, Nerve, and Other Injuries in War Surgery. 193
Jordan, S.: *See* Ryan, A. H.

Kahn, M. H.: Tests of the Functional Capacity of the Circulation. 37
Karsner, H. T., Reimann, S. P., and Brooks, S. C.: Studies in Uranium Poisoning. II. The Solubility of Uranium Oxide in Artificial and Human Gastric Juice. 146
Katz, S. H.: *See* Allison, V. C.

PAGE

Kauffman, M. D.: Sanitary Service Rids Construction Camp of Influenza. 70
Kazanjian, V. H.: Early Suturing of Wounds of the Face. 24
Kelley, T. L.: Principles Underlying the Classification of Men. 59
Kelly, R. W.: A Classification of Employment Management Functions. 80
Keniston, J. M.: The Need of Mental Efficiency. . . . 60
Ketcham, D.: Health Insurance. 17
Keys, E. L., Jr.: The Management of Venereal Diseases by the U. S. War Department during the Past Two Years. 69
Kimball, H. W.: Group Insurance. 29
King, A. G.: Factory Heating. 13, 27
King, A. G.: Modern Factory Heating. 14
King, F. R.: *See* Stovall, W. D.
King, J. D.: Montgomery Ward Builds Employees' Health. 28
King, J. T., Jr.: Fatigue in Irritable Heart and Other Conditions. 40
Kinghorn, H. M.: The Employment of Rest and Exercise after Tuberculous Patients Have Returned to Work. 147
Kirkpatrick, C. W.: Town Planning in Relation to Industrial Development. 166
Kleinschmidt, H. E.: Is Education a Worth-While Factor in the Control of Venereal Diseases ?. 70
Kleinschmidt, H. E.: The Treatment of the Venereal Disease Patient 174
Knowles, M.: What about the Government Housing Program ? 14
Koch, S. F.: Primary Suture of Gunshot Wounds. . . 132
Kohman, E. F.: *See* Norton, W. H.
Kolbe, P. R.: College Education for Industrial Workers. 101
Kolls, A. C.: *See* Marshall, E. K., Jr.
Kramer, R., and Meierhof, H.: Experimental Trinitrotoluene Poisoning. 145
Krumbhaar, E. B., and Krumbhaar, H. D.: Blood and Bone Marrow in Yellow Cross Gas (Mustard Gas) Poisoning. Changes Produced in the Bone Marrow in Fatal Cases. 189
Krumbhaar, H. D.: *See* Krumbhaar, E. B.
Kryst, C.: California's Labor Camps. 167

Labat, A.: *See* Desgrez, A.
La Forge, Z.: Study of the Public Health Nursing in Westchester County. 180
Lagrange, F.: Wounds of the Eye. 191
Lakeman, M. R.: A Development in the Venereal Disease Crusade. 107
Lamb, A. B., Wilson, R. E., and Chaney, N. K.: Gas Mask Absorbents. 69
Lane, W. D.: Westchester, What an American County Can Do. 165
Langfeld, H. S.: Proceedings of the Twenty-Seventh Annual Meeting of the American Psychological Association, Baltimore, December 27 and 28, 1918. . . 102
Lanza, A. J.: Carbon Monoxide Poisoning. 37
Lapp, J. A.: Health and Old Age Insurance in Ohio. . 45
Lapp, J. A.: Health Problems of Industrial Workers. 6
Lasher, W. W.: A Reversible and Adjustable Elbow Splint 40
Lathrop, J. C.: Income and Infant Mortality. 140
Lavialle, P., and Varenne, L.: Identification and Quantitative Determination of Small Amounts of Hydrocyanic Acid. 125
Lawrence, J. N.: *See* Fieldner, A. C.
Lazell, E. W.: Abstract of Proposed Plan for the Psychic Rehabilitation of Psychopathic and Neuropsychopathic Soldiers. 118
Leavitt, F. M.: Launching Part-Time Co-operative Education on a Large Scale. 50
Lee, F. S.: The New Science of Industrial Physiology 49
Lee, J.: The Community, Home of Lost Talents. . . . 115
Legge, T. M.: Trinitrotoluene Poisoning. 105

PAGE

Levine, S. A., and Wilson, F. N.: Observations on the Vital Capacity of the Lungs in Cases of "Irritable Heart" 124
Levitas S. A.: *See* Wilson, F. N.
Levine,, A.: Training for Disabled Soldiers and Sailors 62
Lewis, D. D.: Débridement 193
Lewis, F. E.: Splint Devised for Treatment of Stiff Metacarpo-Phalangeal Joints 24
Lewis, T.: *See* Cotton, T. F.
Liebmann, E. L.: The Library's Part in the Reduction of Industrial Accidents 129
Lincoln, E. A., and Cowdery, K. M.: An Abbreviated Mental Age Scale for Adults 168
Lindsey, S. M.: The Next Steps in Social Insurance in the United States 45
Lioust, C.: *See* Malmejac, F.
Lipiner, J.: *See* Jagić, N.
Little, R. M.: Who Shall Bear the Extraordinary Compensation Cost of the Total Disability Caused by Successive Injuries? 45
Lohoff, K.: Education of the Workmen in Slaughter-Houses to Cleanliness 37
Loomis, W. P.: The General Industrial School for Cities of Less than Twenty-Five Thousand Population 86
Lord, C. B.: War-Time Participation of Women in Industry 109
Loughborough: Continuation Schools in Industrial Areas 51
Love, A. G.: *See* Davenport, C. B.
Lowell, F.: A Preliminary Report of Some Group Tests of General Intelligence 168
Lucas, G. H.: *See* Holland, W. D.
Lührig, W.: Chrome Poisoning: Interesting Cases from Toxicological Practice 125
Lynch, J. M.: Bureau of Women in Industry 57

Macarthur, M.: American Health Insurance Bill Better than British Act 139
MacColl, J. R.: *See* Hale, G. E.
Mackay, C. D'A.: Outdoor Industrial Theatres 168
Mackey, H. A.: Employment Opportunities for Rehabilitated Men in Pennsylvania 46
Malmejac, F., and Lioust, C.: Picric Jaundice and Icterus 21
Manning, M. L.: Early Closing Helps Efficiency of Workers 132
Marris, H. F.: A Report upon the Use of Atropine as a Diagnostic Agent in Typhoid Infections 89
Marshall, E. K., Jr.: Mustard Gas 189
Marshall, E. K., Jr., and Kolls, A. C.: An Apparatus for the Administration of Gases and Vapors to Animals 37
Marshall, H. W.: Notes on the Treatment of Low Back Strains 56
Martel, M. H.: The Reorganization of the General Abattoir of La Villette 123
Martin, F.: St. Dunstan's and the Blinded Soldier ... 82
Martin, W.: The Treatment of Bone Cavities 194
Mason, C. C.: *See* Howe, P. E.
Masters, W. E.: A Model Mining Tropical Village ... 113
Mateer, F.: The Diagnostic Fallibility of Intelligence Ratios 80
Mavrogordato, A.: Experiments on the Effects of Dust Inhalation 10
May, C. C.: Better Housing — What It Asks of the Physician 43
Mayer, J.: Social Hygiene Legislation in 1917 53
McBride, J. H.: Housing and Health 137
McClugage, H. B.: *See* Givens, M. H.
McClurg, N. I.: *See* Daniels, A. L.
McCoy, G. W.: Status of Prophylactic Vaccination against Influenza 190
McDonald, A. L.: The Treatment of Burns 40
McGeary, G. E.: Treatment of Burns 194
McGee, F.: Industrial Welfare Nursing 136
McKinney, J.: Some Essentials in Teacher Training as They Apply to Trades and Industries 122

PAGE

McLeod, N.: What Sick and Crippled Men Are Doing for the Ford Motor Co. 30
McMurtrie, D. C.: Index-Catalogue of a Library on Rehabilitation of the Disabled 62
McMurtrie, D. C.: Testimony on the Bankhead-Smith Bill 82
McMurtrie, D. C.: Training Disabled Men for Self-Support 46
McNicholas, H. J.: *See* Gibson, K. S.
McReynolds, J. O.: Foreign Bodies within the Eyeball 191
Mead, E.: Placing Soldiers on Farm Colonies 18
Meagher, J. F. W.: Nervous and Mental Diseases in the War 144
Meakins, J. C., and Gunson, E. B.: Orthodiagraphic Observations on the Size of the Heart in Cases of So-Called "Irritable Heart" 21
Meakins, J. C., and Wilson, R. M.: The Effect of Certain Sensory Stimulations on Respiratory and Heart Rate in Cases of So-Called "Irritable Heart" 21
Meeker, R.: Industrial Hazards 120
Meeker, R.: Lacks in Workmen's Compensation 44
Mees, R. A.: A Symptom in Arsenical Polyneuritis ... 38
Meierhof, H.: *See* Kramer, R.
Mellon, A. W.: *See* Hale, G. E.
Mendel, L. B.: *See* Osborne, B.
Mendenhall, W. L.: The Effect of Fatigue on the Heart and Cardio-Skeletal Quotient 24
Merkel, S.: On the Hygiene of Transportation Workers 186
Merritt, E. A.: *See* Bird, F. H.
Metcalf, C. R.: Impairment of Function of the Hand Due to War Injuries 24
Metz, J. J.: *See* Tarbell, R. W.
Meyer, E. C.: Hospital Service in Rural Communities 19, 20, 35
Meyers, M. A.: A Heart-Talk with Industrial Nurses 181
Miles, H. E.: Industrial Training, a Way Out 122
Milne, W. D.: Chemical Fire Hazards 131
Minot, A. S.: *See* Denis, W.
Mishell, D. R.: A Case of Cancer Following a Sulphuric Acid Burn 190
Moore, D. W.: "Cleanliness Is Akin —." 37
Moore, E. A.: Report of the Committee on Vocational Supervision 51
Moore, R. C.: Age Scale Methods of Measuring Intelligence 96
Morris, B. J., and Paull, C. H.: Opportunities for Handicapped Men in the Rubber Industry 118
Morrison, H. F.: *See* Albee, F. H.
Mouchet, A.: First French Congress on Orthopedic Surgery 176
Mouriquand, G.: *See* Weill, E.
Mowell, J. W.: Selection of the Physician under Compensation Laws 81
Mugdan, O.: The Constitution of the German Republic and the Medical Profession 171
Munroe, J. P.: The Part-Time, Evening, and All-Day Vocational School 86
Murlin, J. R., and Hildebrandt, F. M.: Average Food Consumption in the Training Camps of the United States Army 133
Murphy, J. B., and Sturm, E.: Effect of Dry Heat on the Blood Count in Animals 12
Myers, C. E., and Myers, G. C.: A Group Intelligence Test 154
Myers, G. C.: *See* Myers, C. E.
Myerson, A.: Mental Disease in Families 87
Myerson, A.: The Neurosis of the Housewife 172

Nagai, S.: Cement Inhalation and Its Effect upon Tuberculous Lungs 146
Nagel, W.: *See* Teichmann, E.
Nager, F.: Electric Accidents Affecting the Ear 191
Nakahara, W.: The Source of the Lymphocytosis Induced by Means of Heat 12
Neilson, I. L.: *See* Waite, J. H.

PAGE

Nelson, N. A.: Neighborhood Organization vs. Tuberculosis . . . 190
Newell, W.: Head and Eye Protection . . . 23
Newman, B. J.: Industrial Losses . . . 158
Newman, B. J.: What the Federal Government Is Doing for Industrial Hygiene . . . 120
Nitsch, J.: Hygienic Survey of the Garden City of Staaken near Spaudau . . . 167
Norton, W. H., and Kohmain, E. F.: Anthrax in a Soldier . . . 22
Noyes, H. T.: Planning for a Manufacturing Plant . . 134
Nutter, J. A.: Reconstructive Surgery. The Problem of Records . . . 18
Nygren, W.: Heating and Ventilating Problems . . . 135
Nygren, W., and Hering, R.: Requirements and Standards for Heating and Ventilating . . . 13

Oberfell, G. G.: *See* Fieldner, A. C.
Olmstead, F. L.: Lessons from Housing Developments of the United States Housing Corporation . . . 79
Ordahl, G.: Industrial Efficiency of the Moron . . . 66
Osborne, B., and Mendel, L. B.: The Vitamines in Green Foods . . . 12
O'Shea, P. F.: Additional Safeguards Required for Women Employees . . . 23
Otis, E. O.: Tuberculosis from the Angle of an Expert 190

Pagé, L. D.: Immigration and the Canadian National Committee for Mental Hygiene . . . 122
Palet, L. P. J.: Normal Copper in Toxicology . . . 190
Palmer, G. T.: The Rôle of Ventilation in Preventive Medicine . . . 178
Patterson, F. D.: Progress in Industrial Hygiene and Medicine during the Year 1918 . . . 6
Pattison, H. A.: Agricultural and Industrial Community for Arrested Cases of Tuberculosis and Their Families . . . 69
Paull, C. H.: Opportunities for Handicapped Men in the Brush Industry . . . 62
Paull, C. H.: *See* Morris, B. J.
Payne, E. G.: Plan of Safety Instruction in Public and Parochial Schools . . . 193
Payne, E. G.: Teaching Safety in the Schools . . . 90, 130
Pearl, R.: Influenza Studies. I. On Certain General Statistical Aspects of the 1918 Epidemic in American Cities . . . 127
Pearson, A.: Victory over Blindness . . . 82
Pellegrini: Clinico-Statistical Contribution to the Study of Cineplastic Surgery . . . 91
Perkins, R. G.: A Study of the Munitions Intoxications in France . . . 161
Perrott, G. St. J., Yablick, M., and Fieldner, A. C.: A New Absorbent for Ammonia Respirators . . . 124
Peters, F. E.: Capacities of Small Septic Tanks . . . 179
Petersen, K. T.: On the Prevention and Treatment of Static Flat-Foot through Regulation of Function together with Observations on the Statics and Mechanics of the Normal Foot and Flat-Foot . . . 24
Phelps, E. B.: Stream Pollution and Its Relation to the Chemical Industries . . . 136
Phillips, V.: *See* Sherman, H. C.
Pichler, K.: Poisoning through Inhalation of Ethylmercaptan . . . 9
Pick, P., and Wasicky, R.: Experiences with Toxicological Substances Employed by Soldiers to Produce Self-Inflicted Injuries . . . 124
Pierce, C. C.: Public Health Service Program for Nation-Wide Control of Venereal Diseases . . . 53
Pierce, C. C.: The Public Health Service Campaign against Venereal Diseases . . . 174
Pillsbury, A. J.: An Adventure in State Insurance . . . 185
Pinel, M.: Two Cases of Almost Complete Phosphorus Necrosis of the Jaws . . . 52
Pinter, R.: *See* Toops, H. A.
Pintner, R.: A Non-Language Group Intelligence Test . . . 154
Pitres, A., and Verger, H.: The Medico-Legal Problem of Hystero-Traumatism . . . 60

PAGE

Pohl, J.: An Investigation of the Detoxication of Methyl Alcohol . . . 9
Polakov, W. N.: Fatigue and Industrial Efficiency . . 176
Pool, E. H.: War Wounds: Primary and Secondary Suture . . . 193
Porges, O., and Wagner, R.: A Peculiar Starvation Disease . . . 150
Prescott, S. C.: Dried Vegetables for Army Use . . . 133
Pressey, L. W.: *See* Pressey, S. L.
Pressey, S. L., and Pressey, L. W.: "Cross-Out" Tests, with Suggestions as to a Group Scale of the Emotions . . . 97
Price, D. J.: Grain Dust Explosions and Fires . . . 131
Price, G. M.: Disabled in the Line of Duty . . . 39
Price, G. M.: Industrial Medical and Dental Clinics in the Women's Garment Trades . . . 42
Price, G. M.: Rehabilitation Problems . . . 46
Priestley, J.: On the Proper Use of School Medical Statistics . . . 186
Pritchett, H. S.: *See* Hale, G. E.
Puckett, C. D.: Proper Construction for Rain Water Filter . . . 27
Putti, V.: Arm Prosthesis . . . 91

Quimby, R. S.: Human Relations and the Industrial Physician . . . 65

Ram, G. S.: Use of Electricity in Factories . . . 164
Ranelletti, A.: Occupational Lesions in Nasal Septum 191
Rausch, C. C.: A Warning to Locomotive Crane Operators . . . 56
Rausch, C. C.: Definite Means of Insuring Adequate Illumination in Work Places . . . 112
Rausch, C. C.: Hazards in a Garage . . . 39
Rausch, C. C.: Power Drives for Sewing Machines . . 107
Rausch, C. C.: Two-Hand Tripping Device for Punch Press . . . 39
Reach, F.: Two Cases of Poisoning by an Explosive . . 105
Reimann, S. P.: *See* Karsner, H. T.
Rex, F., and Childs, R. S.: The Work of the Reconstruction Legislatures . . . 80
Rice, E. E.: Group Insurance for the Industrial Worker . . . 44
Richter, A. E.: Keeping Workers Fit . . . 136
Rippert: Industrial Slaughter-Houses . . . 32
Roach, J.: Health Risks from Dust Caused by Buffing, Polishing, and Grinding Metals . . . 127
Roberts, G. L., and Brandenburg, G. C.: The Army Intelligence Tests at Purdue University . . . 182
Robertson, V. O.: Rehabilitation of Industrial Cripples in Massachusetts . . . 46
Robinson, G. L.: Design Features of Sewage Disposal Plant at Industrial Housing Development of Alanwood Iron and Steel Co. at Swedeland, Pa . . . 42
Robinson, M. J.: Industrial Health Protection at the Western Electric Company . . . 44
Rockefeller, J. D., Jr.: The Four Partners in Industry 158
Rogers, J.: Fatigue Disease as Exemplified in Functional Disorders of the Stomach and Thyroid Gland 41
Rogoff, J. M.: *See* Stewart, G. N.
Root, E.: *See* Hale, G. E.
Rose, C., and Berg, R.: Dependence of the Protein Requirement on the Mineral Metabolism . . . 150
Rosenbloom, J.: Studies in a Case of Acute Bichloride of Mercury Poisoning Treated by the Newer Methods, and Followed by Recovery . . . 21
Rosenheim, O.: Energy Expenditure and Food Requirements of Women Workers . . . 150
Rosenstein, D.: Recent Developments in Industrial Training . . . 101
Ross, H. C.: Occupational Cancer . . . 11
Rothschild, D.: The Problem of the Working Ability and the Earning Capacity of Tuberculous Individuals . . . 32
Rowe, M. J.: Alcohol and Crime . . . 103
Royer, B. F., and Emerson, C. A., Jr.: Mosquito Eradication in Southeastern Pennsylvania . . . 113
Rubinaw, I. M.: For the Health of the Holy Land . . . 170

PAGE

Ruml, B.: The Extension of Selective Tests to Industry . . . 15
Ryan, A. H., Jordan, S., and Yates, A. B.: Muscular Tonus in Relation to Fatigue . . . 109
Ryhiner, P.: Poisoning by Oil of Chenopodium . . . 125
Rynearson, E.: The Pittsburgh Co-operative Plan . . . 101

Salvesen, H. A.: *See* Van Slyke, D.D.
Samuels, F.: The Best Thing That Ever Came to Chester . . . 115
Saville, C. M.: Are Check Valves between Public and Private Water Supplies Necessary or Safe ? . . . 179
Sawyer, W. A.: A Program of Health as Applied by the American Pulley Company . . . 44
Sawyer, W. A.: Installing Employment Methods . . . 16
Sawyer, W. A.: Training and Placing the Disabled . . 80
Scharlier, M.: The Relation of Alcohol and Alcoholism to Maternity and Child Welfare . . . 177
Scheffel, C.: An Analysis of Two Hundred and Sixteen Industrial Accidents . . . 70
Schereschewsky, J. W.: Need and Method of Coordinating Federal, State and Local Health Agencies in Promoting Industrial Hygiene . . . 156
Schiff, A.: Chronic Saturnism, Ulcus Venticuli and the Vegetative Nervous System . . . 144
Schmidt, P.: Plans for the Hygiene of the Future . . . 85
Schnitter: The Early Diagnosis of Industrial Lead Poisoning by Means of Blood Tests . . . 126
Schoen, H.: A New School for Managers for Our National Industry and Our Commerce in France and Abroad . . . 172
Schulze, W.: On the Occurrence of Toxic Necrosis of the Jaws Following Antiluetic Treatment . . . 125
Segur, A. B.: Industrial Surveys for Physical Readjustments . . . 15
Selby, C. D.: Functions and Plan of Organization of Division of Industrial Hygiene . . . 85
Selby, C. D.: Modern Industrial Medicine . . . 35
Selby, C. D.: Studies of the Medical and Surgical Care of Industrial Workers . . . 72
Selby, C. D.: The Plant Dispensary . . . 27
Selby, C. D.: Twenty Suggestions to Industrial Physicians and Surgeons . . . 49
Seller, J. T.: Savings to a Manufacturing Concern in a Plant Dispensary . . . 42
Selter, H., and Esch, A.: Humidity as an Active Factor in Ventilation, and the Value of Window Opening in Fully Occupied Rooms with Small Temperature Difference from Outside Air . . . 13
Sever, J. W.: Disability Following Injuries to the Back in Industrial Accidents . . . 148, 164
Seymour, G.: A Year's Progress in Venereal Disease Control . . . 54
Shannon, W. E.: Government Housing at Home and Abroad . . . 114
Shapiro, J. M.: Publicity Aids Venereal Disease Fight 128
Sherlock, C. C.: Conflict of Compensation Acts . . . 45
Sherlock, C. C.: Liability of Employer for Hospital, Surgical and Medical Aid . . . 45
Sherlock, C. C.: Neurasthenia a Growing Disease in Engineering Work . . . 41
Sherlock, C. C.: The Explosion of Chemicals. I. Common Law Liability . . . 168
Sherlock, C. C.: The Explosion of Chemicals. II. Workmen's Compensation Acts . . . 168
Sherman, H. C., Winters, J. C., and Phillips, V.: Efficiency of Oat Protein in Adult Human Nutrition 150
Sherwood, W. A., and Jones, M. L.: Back Pain in the Military Service . . . 56
Shufeldt, R. W.: Major H. R. Allen's Instantaneous Method of Reshaping Tool Handles so that They May Be Used by Deformed or Crippled Hands . . . 31
Shufflebotham, F.: Influenza among Poison Gas Workers . . . 89
Silbert, S.: *See* Frazier, C. H.
Simonds, J. P.: The Mechanism of the Protective Action of Carbohydrate Diet in Phosphorus and Chloroform Poisoning . . . 21

PAGE

Skinner, M.: Children in Factory Life . . . 134
Slosse, A.: *See* Bayet, A. (2)
Smith, B.: Physical Exercises in Use in the Cardiovascular Service . . . 8
Smith, B.: The Possibilities of Physical Development in Cases of Effort Syndrome by Means of Graded Exercises . . . 124
Smith, B.: *See* Gittings, J. C.
Smith, F. C.: Tuberculosis: Its Predisposing Causes 106
Smith, H. H.: Complete Medical Service Pays Big Dividends . . . 27
Smith, H. I., and Hamon, R. J.: Methane Accumulations from Interrrupted Ventilation . . . 21
Smith, J. H., Jr.: Certain Features of the Education and Publicity Campaign for the Control of Venereal Diseases in New Jersey with Some Apparent Results . . . 128
Smith, J. R.: *See* Allport, F.
Smith, K. G.: Some Fundamentals for Vocation Teachers . . . 86
Smith, W. G.: Immigration, Past and Future . . . 122
Smith, W. S.: Doping in Aircraft Works . . . 105
Smyth, N. A.: The United States Employment Service . . . 121
Solari, E.: *See* Fontègne, J.
Sollmann, T.: Dichloramin-T and Petrolatum Dressing for Burns . . . 24
Soper, G. A.: Some Unprotected Routes of Infection 88
Soper, G. A.: Typhoid Mary . . . 89
Soresi, A.: The Preparation of the Skin for Operation with Solution of Rubber and Ether instead of Tincture of Iodine . . . 195
Southard, E. E.: General Psychopathology . . . 172
Spence, P. C.: Machinery Lay-Outs . . . 39
Sprague, L. W.: Uses of Motion Pictures in Industrial Diseases . . . 188
Springer: A Comment on the Question of Spreading the Knowledge of Hygiene among the Public . . . 169
Stassen, M.: Cineplastic Surgery and Prostheses . . . 91
Staunig, K.: Roentgen Findings in Nutritional Skeletal Damage . . . 133
Steensland, H. S.: *See* Weiskotten, H. G.
Steidle, E.: Dangerous and Safe Practices in Bituminous Coal Mines . . . 193
Steinbach, C.: After-School Care of the Feeble-Minded . . . 51
Steiner, O.: Dinitrobenzol Poisoning . . . 21, 125
Steizner, H.: The Capacity for Military Service of the Psychically Abnormal . . . 144
Sterling, H.: Labor's Attitude toward Education . . . 86
Stern, W. G.: A Report of the Cleveland and Elyria Cripple Surveys . . . 31
Stevenson, W. L.: Sanitation in Emergency Shipyards . . . 14
Stewart, G. N., and Rogoff, J. M.: A Contribution to the Technic of Artificial Respiration in Man . . . 93
Stickney, G. H.: Present Status of Industrial Lighting Codes . . . 42, 57
Stifel, R. E.: Methemoglobinemia Due to Poisoning by Shoe Dye. Report of a Series of Cases at an Army Camp . . . 9
Stifel, R. E.: Report of a Case of Cyanosis at Camp Jackson, S. C., Due to Poisoning from Shoe Dye . . . 9
Stimpson, W. G., and Foster, M. H.: Prevention of Disease and Care of the Sick . . . 49
Stone, H. E.: The Vocational Counsellor and His Work . . . 160
Stone, S. H.: With the Red Cross in Italy . . . 53
Stone, W. S.: Compulsory Health Insurance Legislation . . . 138
Stovall, W. D., and King, F. R.: Water Supplies and Drinking Devices — How They May Spread Bacterial Diseases . . . 95
Stromquist, W. G.: Malaria Control at Nitrate Plant 70
Strong, E. K.: War Psychology and Education . . . 80
Sturgis, C. C.: *See* Tompkins, E. H.
Sturgis, C. C.: *See* Wearn, J. T.
Sturm, E.: *See* Murphy, J. B.

PAGE

Süssman, O.: A Consideration of the Permeability of the Intact Skin to Lead (A Preliminary Communication) 38
Swartz, N.: The Labor Situation in France 100
Swasey, A.: *See* Hale, G. E.
Swift, H. M.: Concerning the Relative Frequency of Insanity in City and Country 66
Swift, W. N.: The Enforcement of International Labor Standards Relating to Child Labor 165
Swiggert, G. L.: The New Education and the Nation's Business 101
Sydenstricker, E., Wheeler, G. A., and Goldberger, J.: Disabling Sickness among the Population of Seven Cotton-Mill Villages of South Carolina in Relation to Family Income 48

Tarbell, R. W., and Metz, J. J.: Teaching Safety to Apprentices 90
Taylor, F. A.: *See* Barbour, H. G.
Taylor, G. S.: Labour-Saving Appliances 165
Teague, M. C.: *See* Fieldner, A. C. (2)
Tebb, A. E.: *See* Greenwood, M.
Tedeschi, E.: Some Observations on the Recent Influenza Epidemic with Special Consideration of Its Course among the Working People 38
Tedeschi, E.: The Danger of Tuberculosis in Industrial Establishments 8
Teichmann, E., and Nagel, W.: Experiments on Detoxifying Inhaled Hydrocyanic Acid by Sodium Thiosulphate 125
Thelen, M.: Public Service under Government Operation of the Railroads 175
Thomas, E. B.: Theodore Roosevelt and Industrial Education 102
Thompson, H.: Food Requirements of a Normal Working-Class Family 150
Thomson, A. N.: The Massachusetts Plan 106
Thomson, G. H.: The Hierarchy of Abilities 97
Thomson, G. H.: The Proof or Disproof of the Existence of General Ability 97
Thorndike, E. L.: A Standardized Group Examination of Intelligence Independent of Language 59
Thorndike, E. L.: Tests of Intelligence: Reliability, Significance, Susceptibility to Special Training and Adaptation to the General Nature of the Task 80
Thorpe, V. G.: Picric Acid Treatment of Burns 108
Thurstone, L. L.: A Standardized Test for Office Clerks 154
Thurstone, L. L.: Mental Tests for Prospective Telegraphers: A Study of the Diagnostic Value of Mental Tests for Predicting Ability to Learn Telegraphy 97
Toering, J.: Nursing Work in the Telephone Companies 181
Tompkins, E. H., Sturgis, C. C., and Wearn, J. T.: The Effects of Epinephrin on the Basal Metabolism in Soldiers with "Irritable Heart," in Hyperthyroidism and in Normal Men 124
Toops, H. A., and Pinter, R.: Educational Differences among Tradesmen 50
Trask, J. W.: Medical and Hospital Treatment under United States Compensation Act 195
Trible, G. B., and Watkins, S. S.: Ear Protection 11
Tribus, L. L.: The New London Housing Project 96
Tucker, G. E.: Compulsory Health Insurance 29
Tufts, J. H.: Wartime Gains for the American Family 142
Tully, E. J.: Trade-Waste Treatment Studies in Wisconsin 58
Tully, E. J.: Treatment of Canning Plant Wastes in Wisconsin 180

Underhill, F. P.: Poisoning with the Lethal War Gases (Physiology and Experimental Treatment) .. 189
Upham, E. G.: Normalizing the Industrial Cripple .. 62

Vail, T. N.: *See* Hale, G. E.
Van der Loo, C. J.: Some Remarks on the Comparison of the State of Nourishment in Schoolchildren 25

PAGE

Van der Slice, E. R.: Some Activities of the Michigan Anti-Tuberculosis Association during 1919 106
Van Itallie: Normal Zinc, Arsenic and Copper Content of Human Body 104
Van Kleeck, M.: Federal Policies for Women in Industry 12
Van Slyke, D. D., and Salvesen, H. A.: The Determination of Carbon Monoxide in Blood 173
Varenne, L.: *See* Lavialle, P.
Vaughan, R. T.: Primary Suture of War Wounds ... 40
Vedder, E. B.: The Epidemiology of the Sputum-Borne Diseases and Its Relation to the Health of the National Forces 10
Verger, H.: *See* Pitres, A.
Verney, L.: The Economic and Political Bases of State Insurance against Sickness 117
Vernon, H. M.: The Causation and Prevention of Industrial Accidents 54
Verrall, P. J.: Stiff Fingers: With Special Reference to Methods of Treatment by Metal and Plaster Splints 71
Vincent, G. E.: The University of Public Health 19
Vitoux, G.: A New Social Law 184
Voegtlin, C., Hooper, C. W., and Johnson, J. M.: Trinitrotoluene Poisoning 68
Volkmann, J.: The Technique of Intracardiac Injections 176
Von Hellens, O.: Control of Venereal Disease in Finland 90
Von Ziegenweidt, C. F. Th.: Is Undernourishment of Schoolchildren Determinable? 25

Wagner, R.: *See* Porges, O.
Wahl, M.: Creatinin and Creatin 24
Waite, J. H., and Neilson, I. L.: Effects of Hookworm Disease on Mental Development of North Queensland Schoolchildren 190
Walker, W. H.: Prevention and Cure of "Red Water" 178
Waller, A. D.: Calibration of a Dock Laborer by Means of his CO_2 Discharge. The Cost of Mechanical Work in Terms of CO_2 Expired. The CO_2 Ordinate of a Dock Laborer (Tom King) during Six Days' Work 41
Wallin, J. E. W.: The Achievement of Mental Defectives in Standardized Educational Tests 104
Wallin, J. E. W.: The Field of the Clinical Psychologist and the Kind of Training Needed by the Psychological Examiner 60
Wallin, J. E. W.: The Value of the Intelligence Quotient for Individual Diagnosis 80
Walshe, F. M. R.: The Deficiency Theory of the Origin of Beri-Beri in the Light of Clinical and Experimental Observations on the Disease, with an Account of a Series of Forty Cases 150
Walther, H.: Treatment of Complicated Finger and Hand Wounds by Traction Splints 176
Warren, B. S.: Health Insurance, the Medical Profession, and the Public Health 61
Washburne, C. W.: A Classified Scale for Measuring Intelligence 167
Wasicky, R.: *See* Pick, P.
Waters, Y.: Industrial Nursing 180
Watkins, S. S.: *See* Trible, G. B.
Wearn, J. T., and Sturgis, C. C.: Effects of the Injection of Epinephrin in Soldiers with "Irritable Heart" 123
Wearn, J. T.: *See* Tompkins, E. H.
Weber, E.: Remarks Concerning the "Work Hygiene Researches" of W. Weichardt and H. Lindner .. 11
Weber, J. J.: Successful Health Supervision by a Manufacturing Company 14
Weichardt, W.: Investigations in Industrial Hygiene. 149
Weichardt, W., and Apitzsch, H.: Industrial Hygiene Studies 104
Weill, E., and Mouriquand, G.: Researches in Experimental Scorbutus 25

PAGE

Weiskotten, H. G., and Steensland, H. S.: The Action of Benzol. V. The Diphasic Leucopenia as a Polynuclear Amphophile Phenomenon (Rabbit) . . . 37
Weller, C. F.: Community Service through the Schools . . . 115
Wells, R.: Economic Values in Sewage and Sewage Sludge . . . 179
Wetmore, A.: Lead Poisoning in Waterfowl . . . 145
Wetmore, F. L., and Goeppinger, L.: The Eight-Hour Day in a Small Training School . . . 121
Wharton, H. M.: Planning the Industrial Plant . . . 112
Wheeler, G. A.: *See* Sydenstricker, E.
White, E. W.: War Activities as They Have Affected Housing, Health and Recreation . . . 114
White, J.: Town Planning in Canada . . . 14
Whitney, F. P.: Choosing a Vocation in Junior High School . . . 160
Wickersham, G. W.: International Labor Standards and Their Possible Enforcement in the United States 157
Wigley, C. G.: Disinfection of Sewage . . . 179
Wildman, E.: Capital Gets a New Director . . . 171
Williams, F. B.: France's First City Planning Law . . 166
Williams, H. W.: *See* Barbour, H. G.
Williams, J. F.: The Health Problem from a New Angle . . . 169
Williams, J. T.: The Teacher as a Social Worker . . . 123
Williams, R. C.: Miners' Safety and Health Almanac 90
Wilson, B.: *See* Allport, F.
Wilson, F. N., Levine, S. A., and Edgar, A. B.: The Bicarbonate Concentration of the Blood Plasma in Cases of Irritable Heart . . . 104
Wilson, F. N.: *See* Levine, S. A.
Wilson, J. C., and Hyman, C. H.: Reconstructive Surgery of the Hand . . . 193

PAGE

Wilson, R. E.: *See* Lamb, A. B.
Wilson, R. M.: *See* Meakins, J. C.
Wing, F. E.: Fighting Tuberculosis in France . . . 52
Wing, F. H.: The Establishment of Unit Trade Schools in Cities of Twenty-Five Thousand or Over 86
Winslow, C.-E. A., Greenburg, L., and Angermyer, H. C.: Standards for Measuring the Efficiency of Exhaust Systems in Polishing Shops . . . 52
Winslow, C.-E. A., Greenburg, L., and Greenburg, D.: The Dust Hazard in the Abrasive Industry . . . 69
Winslow, C. H.: The Rehabilitation of Disabled Soldiers and Sailors or Victims of Industry . . . 62
Winters, J. C.: *See* Sherman, H. C.
Wolf, D.: An Experiment in Employing the Blind . . 31
Wolfe, F. E.: *See* Douglas, P. H. (2)
Woodrow, H.: *See* Arthur, G.
Wright, F. S.: Responsibilities and Opportunities of the Industrial Nurse . . . 180
Wyman, A. H.: Recreation in Industrial Communities . . . 183

Yablick, M.: *See* Perrott, G. St. J.
Yates, A. B.: *See* Ryan, A. H.
Yerkes, R. M.: Report of the Psychology Committee of the National Research Council . . . 59
Yoe, J. H.: *See* Fieldner, A. C.
Young, A. G.: The Tuberculosis Problem . . . 173

Zealley, A. T. S.: *See* Greenwood, H. C.
Zondek, H.: Heart Findings in Illuminating Gas Poisoning . . . 126

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TABLE OF CONTENTS

APRIL, 1920

THE SIGNIFICANCE AND TREATMENT OF VARICOSE VEINS. John Homans, M.D., Instructor in Surgery, Harvard Medical School, and Surgeon, Peter Bent Brigham Hospital, Boston 567

THE INDUSTRIAL DENTAL CLINIC FROM THE STANDPOINT OF THE INDUSTRIAL SURGEON. Ralph W. Elliott, M.D., National Lamp Works of General Electric Company, Nela Park, Cleveland 575

CHARLES TURNER THACKRAH: A PIONEER IN INDUSTRIAL HYGIENE. Thomas M. Legge, M.D., D.P.H., His Majesty's Medical Inspector of Factories . . . 578

A LECTURE ON SEX AND VENEREAL DISEASE HYGIENE. Edward B. Vedder, M.D., Colonel, Medical Corps, U. S. Army; Author of "Syphilis and Public Health" 582

TABLE OF CONTENTS CONTINUED ON PAGE III

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TABLE OF CONTENTS — *Continued*

TWENTY YEARS' EXPERIENCE OF THE NOTIFICATION OF INDUSTRIAL DISEASES. Thomas M. Legge, M.D., D.P.H., His Majesty's Medical Inspector of Factories 590

BOOK REVIEWS 597

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CONTENTS

CHAPTER

I. Introduction.
II. Fundamental Considerations.
III. The Nature of Narcotic Drug Addiction Disease.
IV. The Mechanism of Narcotic Drug Addiction Disease.
V. Remarks on the Methods of Treating Narcotic Drug Addiction.
VI. The Rational Handling of Narcotic Drug Addiction Disease.
VII. Relation of Narcotic Drug Addiction to Surgical Cases and Intercurrent Diseases.
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